

3dcreative

Issue 069 May 2011

Low Poly Characters

Creating a Concept & Modeling by Tamara Bakhlycheva

Alex Stratulat, Dani Garcia, Victor Hugo Queiroz & more!

Gallery - 10 of the best Images from around the world!

Jason Martin

3dcreative interview this fantastic character Artist

"Black Wires"

Project Overview by Carlos Ortega



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LOW POLY CHARACTERS

In this series Tamara Bakhlycheva will walk us through the entire process of low poly modeling. Chapter 1 looks at creating a concept and modeling.



Classical Sculpture

Rafael Ghencev brings us the second chapter of the Classical Sculpture tutorial series. This month focusing on texturing our Greek sculpture.

Unreal Games Engine Tutorial

Lighting and Post Effects is the subject Andrew Finch will be talking you through in this chapter of our **Italian Courtyard** tutorial series.

Modeling Features of the Human Anatomy

Jose Lazaro, Gavin Goulden, Lino Masciulli & Anto Juricic explain the process of creating eyes in chapter 2 of our Human Anatomy series.





computer for too long as the new 3DCreative is here and it's a good one!

The interview artist this month is **Jason Martin**. Jason is not only a great artist working for one of the biggest games studios in the known universe, but is also a nice and interesting guy. Jason had done a few jobs before he finally settled into his position at Blur, and in fact took a peculiar route into the industry, but as you will see from his portfolio he is now producing work of the highest quality.

The eye is often called the window to the soul because of the way it is perceived, and any artist will know that if you don't get the eye right your image will not look right. In this issue our feature modeling artists tackle the eye and show us how to create a realistic eye for your model. We welcome back our artists; **Jose Lazaro** in 3ds Max, **Gavin Goulden** in Maya, **Lino Masciulli** in Cinema 4D and **Anto Juricic** in Modo.

Over the last few months the low-poly characters of **Tamara Bakhlycheva** have graced the 3DTOTAL galleries. I received so many emails from people asking if we could do a tutorial series about the creation of these images I thought "why not". In this series Tamara will show us the entire process she uses to create the images from the concept through to the final production of the image. In this first chapter she sets of at an alarming rate and talks about the concepts and models the character!

I have been enjoying our UDK tutorial series and can't wait to see some of your completed games environments. In this issue **Andrew Finch** continues to build upon his scene looking specifically at the lighting and post effects.

Our classical sculpture series hit the ground running last month and in this issue **Rafael Ghencev** continues to develop his fantastic sculpt by showing us how to texture our models and make them look like classical sculptures. Rafael shows us a great way to display our sculptures and some great techniques for

EDITORIAL

I don't know about where you are, but we have been having some outstanding weather here in the UK. The sun has been shining, and there hasn't been a drop of rain in sight. Perhaps this is a perfect opportunity for you to go out and get some reference images with your camera. But don't stay away from your



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creating the best results when you render your image. Next month it will be our classical Roman sculpture.

There is a huge jump from classical sculpture to this month's making of by **Carlos Ortega**. Carlos is a cartoon king, and in this issue he shows us how he created his cool image Black Wires. Carlos keeps no secrets and walks us through each and every step that he took to create his image. This is another great Making of!

The gallery this month features some amazing work, including images from **Neil MacCormack**, **Dani Garcia**, **Kleber Darcio** and **Bruno Hamzagic**. Have fun!

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CONTRIBUTING ARTISTS

Every month artists from around the world contribute to 3DCreative, and you can find out a little more about them right here! If you'd like to get involved in 3DCreative magazine, please contact: simon@3dtotal.com



JOSE LAZARO

Jose Lazaro is a freelance character artist based in the UK. After working in big titles like CastleVania: Lords of Shadow and Dead to Rights he has decided to change his career creating characters for indie games with more artistic and technical control, developing the pipeline and the final result. Currently he is a mentor for one of the best CG schools.
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GAVIN GOULDEN

Gavin Goulden is a character artist for Irrational Games working on Bioshock Infinite. With 6 years

games industry experience, he has contributed character and environment art assets to multiple titles including

Dead Rising 2, The Bigs 2, Damnation and FEAR 2.

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LINO MASIULLI

Lino Masciulli worked as an art director in the advertising field until 2006. In recent years he moved into the entertainment industry by working as the senior modeler for Rainbow CGI in Rome participating in the production of "Winx and the Secret of the Lost Kingdom", "Winx Club 3D Magic Adventure" and other movies. He currently works for the same company on other animated feature films.
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ANTO JURICIC

Anto Juricic Toni is a character artist and he currently lives in Bosnia and Herzegovina, where he works at Primetime

Studio as a modeler and texture artist on animated features. Along with his passion for creating CG characters he also enjoys teaching others and sharing his techniques through many online tutorials and publications.

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ANDREW FINCH

Aged 28 and living in the great city of Birmingham, in the U.K. He has a degree in 3D Animation which inspired his passion for environment art. He now works as an environment artist at Codemasters. He says, "Working in the games industry is exciting: you never know what the next project will be and there's always something new to learn. This helps to keep you creative and grow as an artist." afinchy@googlemail.com



**RAFAEL
GHENCEV**

Rafael Ghencev is Brazilian character artist. He studied film animation, but it is in traditional art that he considers to be the greatest secret of art. Because of this he is always studying sculpture, painting and photography.

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**WOULD YOU LIKE TO CONTRIBUTE TO
3DCREATIVE OR 2DARTIST MAGAZINE?**

We are always looking for tutorial artists, gallery submissions, potential interviewees, 'making of' writers, and more. For more information, please send a link to your portfolio, or send examples, to: simon@3dtotal.com



Image by Victor Hugo Queiroz

"I FIND MYSELF IN MULTIPLE PROGRAMS ALL THE TIME AND THE INTERACTION BETWEEN THEM CAN BE FRUSTRATING. THE MORE YOU ARE IN AND OUT OF PROGRAMS THE HIGHER THE CHANCE SOMETHING IS LIKELY TO BREAK."



This month's interview is with Blur artist Jason Martin. Jason has a fascinating tale to tell about his past, including stories about his arty parents and his time in the military. He also gives us a little insight into how he works and the benefits of using multiple pieces of software.

JASON MARTIN

INTERVIEW WITH JASON MARTIN

Hello Jason, can you tell us a bit about your background and what you are doing now?

Well, let me see, how far back do I go?

[Laughs]. I grew up in Manchester, Maryland, a small town just north of Baltimore, USA. My family and I lived in a tiny but quaint house out in the woods. My upbringing was awesome and I miss that town every day. I was fortunate enough to be born into a family of artists.

My mother was an illustrator, my father was a traditional animator, and my two younger brothers are both very talented people. One could say I grew up with access to many creative outlets. From an early age I was drawing all the time. I had a minor obsession with the B-17 Flying Fortress and I drew pictures of that bomber constantly.

Both my parents worked at Maryland Public Television and had an animation business on the side called Peregrine Inc. Early on the home freelancing business was doing rather well so my father built an addition to the house centered around an Oxberry animation camera. Have you ever seen one of those? Search for a picture on the internet so you can get an idea of how big they are. Our dining room was basically sitting on a loft over-looking the thing. It was huge, easily around 10-12 feet tall, maybe even



taller. I remember many nights sitting up in my bed hearing my father and business partners working late on stuff. Sometimes I would sneak down there to hang out for a little bit only to be chased back to bed soon after. The weekends would be interesting as well. The cameras weren't really easily accessible so my father would let art students come in from time to time to use them.

I have many fond memories of those early days and maybe that's what set the bug in me down the road. My father's work ethic is impeccable and it definitely rubbed off on me. My mother is also extremely talented. I still look at her work

and am blown away. She was an amazing illustrator and cell painter. Her water colors were incredible, I wish I could paint like that!

Eventually my parents dropped the home business as it was proving to be more work than it was worth. Around this time traditional animation started giving way to computer animation and my father naturally made the move as well. I'm not sure what version he started with, but he was using 3D Studio in one of its early DOS releases. I was a teenager at the time and had developed interests other than art. Not sure why, but I'm guessing since I was surrounded by this stuff it was only natural

that I rebelled against it. All I cared about was skateboarding. School and computers (that didn't involve video games) were the furthest thing from my mind. I had started attending the local community college and nothing was really speaking to me. I had no direction and was sort of floating along and enjoying my youth.

My father, concerned about my future, tried to get me involved in 3D. You know, tried to get me interested in something I could make a living doing. I can still remember the conversation like it was yesterday. My dad came home, sat me down and showed me 3D Studio and said: "Jason, if you sit down and apply yourself and learn this software you can get a job right now with little to no college." He was right too; at the time not many people knew 3D and those who did were becoming a hot commodity. So I sat down and I remember starting a tutorial on building a table and chair. I got about an hour into it and was like "Screw this, I'm gonna go skate with my friends."

My father didn't let up on it. He woke me up one morning on a Saturday and dragged me down to a silicon graphics demo of the Indigo. I think at the time it was running some software from Softimage, I can't be sure on that, but I can tell you all I cared about during the whole thing were the pastries sitting on the back table. I had zero interest. Man, to this day my father jokes with me about all of this. Imagine how much farther I would be in my career if I got started back then. I had so many opportunities and so much access to things others could only dream about and I didn't take advantage of any of it! Things happen for a reason though. I would come around soon enough.

Eventually I got tired of having no direction and I really wanted to get out of Maryland. I was young and wanted to see what the world was like. I was working a construction job near Andrews Air Force base in Washington DC and would often see jets coming and going overhead. I started to think about it and soon after went to talk to an Air Force recruiter. Six months later I was in basic training in San Antonio, Texas. I became



a Weapons Armament Systems mechanic – that's a fancy way to say I loaded bombs and missiles on F-15s and F-16s. It was good for me. It gave me discipline and money for college. It was a fun four years and I got to see and do a lot of things. I started to get tattooed a lot during this time and it kind of revitalized the artistic interests I had as a child. I started to draw again and was seriously considering picking up tattooing as a viable career option after the military. In fact, I had a few options for apprenticeships lined up when I was to get out in December of 2001.

"I KNEW I HAD TO TAKE ADVANTAGE OF MY TUITION BENEFITS AND ALL THE OPPORTUNITIES A BIG CITY HAD TO OFFER"

September 11th put a stop to that. In fact, September 11th had a huge impact on the direction of my career. The military enacted stop loss and I was unable to get out in December and was placed on hold. Eventually they got to me and said you have two weeks to decide if you are getting out or re-enlisting. My options for an apprenticeship had fallen through at this point, I had nothing lined up, and I wasn't about to go back home and have nothing going on. The military dangled a huge re-enlistment bonus in my face and was giving me my pick of duty

stations. I thought, well, if I move to a base near a bigger city I'd have more of an opportunity to either start tattooing or go to school. Vegas was my first choice and within a week they had it lined up for me. So I re-enlisted for four more years and off to Las Vegas I went.

Upon arrival I thought long and hard about tattooing but eventually decided that it wasn't for me and that getting back into school was more of a priority. I didn't waste any time either. I knew I had to take advantage of my tuition benefits and all the opportunities a big city had to offer. I had always been an avid



gamer and 3D started to spark my interest so I decided to enroll at the Art Institute of Las Vegas in the Media Arts and Animation program.

Now in the beginning I was a total noobie concerning 3D, I had no idea what route I wanted to go and at first figured I would become an animator. But animation didn't speak to me and, to be very honest, after my first quarter I wasn't too excited about this stuff, but I wasn't about to give up. Up to this point I had just entry level basic animation courses, as in traditional animation, no 3D work yet. Soon I was re-introduced to 3D modeling,

this time with better results. It was 3ds Max 6 and it was the first time I had really been excited about 3D. Things sort of fell in line soon after and I knew modeling was for me. I gave animation a fair shake too, but it wasn't my bag. I was better suited to modeling and asset building. It combined craftsmanship and sculpting, kind of a match made in heaven for me.

I graduated in 2006, but I felt my education was very general and I thought Vancouver Film School was a good choice to further my modeling interests. Turns out I was right, VFS was a great experience. It wasn't cheap but, all in all, I worked really hard and was happy with the results.

Upon graduating VFS I was excited to move back home and it was my intention to look for some work locally in Maryland so I could be close to the family. I had been away at this point for almost 10 years. I was very interested in working for Bethesda Softworks at the time and I was hoping to get in there as it seemed like the logical choice. However, I had always been a huge fan of Blur's cinematics and I thought, "What the hell, I'll send my reel there" thinking it's a one in a million shot they will call back. I had also just posted my student reel everywhere I could at the time. It went front page on CGTalk and I can't tell you how helpful that was. In the matter of a few days, I had studios talking to me. It was an amazing experience and I was extremely blessed to have such opportunities presenting themselves.



“EVERYONE WAS PUSHING EACH OTHER. IT WAS VERY MOVING TO BE A PART OF THAT ATMOSPHERE.”

Bethesda was one of these studios showing interest. They decided to send over an art test and I was really excited about it. Things were going well. On a Friday night a little while later, I was over at a friend's house having some beers. My phone buzzed with an email so I checked the header and I saw it was from Tim Miller of Blur Studio. For those who don't know, Tim is the co-owner and creative director of Blur. I was familiar with the name since I was a huge fan of the studio and I got pretty excited. Anyhow, I opened it and it was basically Tim saying: “We like your stuff and we could use you for about six months of freelance work. Can you be out here in two weeks?” To wrap up this small

novel, in two weeks I was driving out to LA and the rest is history. I busted my ass for Blur and at the end of my freelance period they hired me as staff and I've been here ever since!

That is a rather adventurous story behind your success! Do you have any tips for aspiring 3D artists?

Hmm, tips, let me see. The best thing any aspiring 3D artist can do is get to know the basics before you even touch any programs. Life drawing and plenty of reference is always a good thing! No tool or 3D package can teach you good form and silhouette. All too often I see kids jumping the gun here. You can't expect to be a good 3D artist without a strong foundation. Foundation is everything! In fact I try to go back to the basics as much as possible. I wish I had more time for it to be honest! I work a lot so my time is limited, but I try to do life drawing and painting when I can fit it in.

You went to both The Art Institute of Las Vegas and Vancouver Film School not too long ago – how did they help you get to where you are now?

Well, I think they were both pivotal to my career for different reasons. When I first decided to attend AI of Las Vegas, I was very green in terms of 3D. Besides what I saw my father doing years ago, I didn't know much at all. I've always been a gamer so initially that's what sparked my interest. I figured I could go to school and end up in a game studio somewhere making games I'm passionate about. Initially I wasn't too impressed with the program but I stuck it out and eventually got into it. Once I had my first 3D course it was off to the races, I was hooked on modeling. I sought out anyone who could show me more than what I already knew. Eventually I had made friends with everyone at the school who was passionate about the work and we sort of bounced ideas and workflows off each other.



Sadly, the school was very general and there wasn't much emphasis on modeling so I dug up information anywhere and everywhere I could. The head of the 3D program, Lee Laneir was great and very supportive. He always seemed to keep an eye out for the guys who really wanted it and were pushing the bar. Thanks Lee, you were excellent and I always appreciated it! I had a good time at AI but again, at the end, I felt I just didn't know enough and needed to seek further education.

Around this time VFS was blowing up the internet with amazing modeling reels and you couldn't help but take notice. VFS had a hefty price tag though and I was a little apprehensive about it. However, I just kept seeing stuff coming out of there that was far better than anything I was doing so I bit the bullet and decided to enroll.

I moved up there in the spring of '06 and started classes in the beginning of May. VFS was tough love, let me tell you. It was a huge workload and a bit overwhelming, but it was well worth it. It was a different environment. Everyone was pushing each other. It was very moving to be a part of that atmosphere. My class was great. I learned so much from everyone around me, made some very good friends, and the majority of our class is all working in the industry.

In terms of the actual curriculum you get six months of a basic introductory style course and then you moved into your specific stream of choice: animation, modeling or visual effects. You then move into the "ant farm" where you spend six months working on your reels. This is where most of us got the majority of our education and had many sleepless nights. It was a great time and if it wasn't for VFS I wouldn't have landed at Blur right out of school.

In your time at Blur Studio you seem to have worked on some really interesting and high-profile game titles. Can you name a few and which one is your favorite?

It's hard to say to be honest. I've been fortunate enough to work on several iconic characters and each was such an awesome experience. It's a toss-up between *Alpha Series*, Big Daddy from *Bioshock 2*, The Joker from *Arkham City*, and Darth Vader from *The Force Unleashed 2*. In the end I would have to say Darth Vader wins. I grew up on *Star Wars* and I'm pretty sure any modeler would jump at the chance to model Darth Vader. It was pretty awesome I have to say!

I've also worked on a few other less-iconic characters that were really fun to do. Chompy from the *Jabberwocky* cinematic comes to mind, as well as Grunt from *Mass Effect*. Creatures are a blast to do. They can be very interpretive



and loose. I still love humanoids as well though as they are always challenging. If you can make a realistic face you can do a creature. Realism is the biggest challenge.

Do you have any sources of inspiration or people you look up to?

Many! So many it's not even funny! I find inspiration from all sorts of stuff. It's not restricted to the 3D genre. Walking into Blur I had the opportunity to work with some amazing character artists like Laurent Pierlot and Alessandro Baldasseroni. Both have been big inspirations to me and very helpful – they are very grounded, modest, and good passionate people. I find inspiration outside of Blur as well, of course.

"I I'M NOT A FAN OF EGOS IN THE INDUSTRY. IT'S ALWAYS GOOD TO STAY GROUNDED AND FOCUS ON YOUR WORK"

There are countless modelers, sculptors, and painters out there that drive me. I'm a big fan of the creations of Jordu Schell, Rick Baker, and Stan Winston – their contributions to cinema have been nothing short of incredible. I am also a huge fan of fantasy artist Richard Corben, I love his color pallet and paintings. Of course, along with him goes the wonderful Frank Frazetta. Zdzislaw Beksiński has always been a great source of inspiration too – you can get lost

in his paintings! Some of these guys I feel are mentioned often, but it's for a good reason. They are amazing at what they do!

I'm a fan of low brow art as well. There is some brilliant stuff going on there, from Robert Williams to Robert Crumb and everything in between. And Some tattooers have made some awesome contributions to that scene too. There is some cool stuff going on there and not just on skin. A few names that come to mind are Timothy Hoyer, Aaron Coleman, Tim Lehi, and Watson Atkinson. Also, switching gears back to 3D, it only takes a few minutes at any of the front runner digital websites like ZBrush Central, 3DTotal, CGHub, and CGTalk to get a good dose of inspiration. I see stuff the younger kids



are doing these days and it's incredible. Kinda scary to be honest, but it keeps you on your toes! So much awesome stuff out there, I can go on for days!

Could you tell us a bit about your current workflow?

Sure. It's a little more chaotic than most others I would think. The reason being I tend to use XSI and Max in tandem with some ZBrush and Mudbox. I'm a huge fan of XSI's modeling tools; in my opinion no other package that I have tried has come close to the elegance of XSI's polygon tools. The Tweak tool, Proportional tool, and Move Proportional tool are so nice to manipulate polygons. It has a very organic feel to it. XSI also handles dense meshes very well

so it can handle my ZBrush meshes with ease. Being that Blur uses two major packages, I get to utilize the best of both. I will poly model everything in XSI, then go to ZBrush or Mudbox, then out to Max to paint and texture. Blur uses XSI to animate, but everything is cached out and run through Max for rendering, so I have to texture in Max.

As you can see, I'm in and out of a bunch of software. It usually runs somewhat smoothly, but when you are in and out so much, sometimes meshes break and point counts change. It can be a pain but it's manageable. I actually really enjoy having the ability to tap into two major packages. Each package has strengths and weaknesses and it's nice to be



able to utilize them both for certain things. For the majority of work, I'll poly model in XSI and texture in Max. I use ZBrush for 90% of my sculpting needs but I'm trying to give Mudbox some love on the side because it's got some good stuff going on there as well.

Usually to kick a character off we are handed a concept or we might have a game asset to either cannibalize or use as a reference. More often than not though the assets we get are works in progress or not fully developed yet. From there I'll build up a base in XSI and get all my poly modeling squared away and unwrapped, then it's into ZBrush for sculpting. From ZBrush we go to Max for texturing and square away all the final technical pipeline stuff to get it ready for rigging. For final rendering we use V-Ray. We switched over last year from MR



and it's been a smooth transition for the most part. I like V-Ray, although I'm not sold on the skin shader yet and I miss the MR skin to be honest. The folks over at Chaos Group are very responsive though and we have had some great support.

"I FIND MYSELF IN MULTIPLE PROGRAMS ALL THE TIME AND THE INTERACTION BETWEEN THEM CAN BE FRUSTRATING."

In general that's my workflow. It's fairly straightforward. It can be wonky at times, but for the most part it works well for me. I do like to experiment with new things when I can. On *DC Universe* I had the opportunity to change it up a bit and utilize ZBrush much earlier in the modeling process. For Cyborg I actually took a base character into ZBrush and sculpted all his armor up from the base mesh, then re-topologized it later in Max. This was a very handy approach to the character; to be able to concept sculpt out the pieces of armor was very fast and effective. I actually did a small walkthrough of that process over at ZBrush Central if anyone is interested.

Do you feel that something is missing in today's software or do you have something you wish could be improved to ease the pain in certain areas? (Generally speaking, not software-specific).

Well I find myself in multiple programs all the time and the interaction between them can be frustrating. The more you are in and out of programs the higher the chance something is likely to break. Not to mention, it's a huge time waster to be exporting and importing files. I know ZBrush has made some steps in the right direction by integrating GoZ, but as always, it's pretty hard to get everything to play well together. I'm not saying everything should be in one package, but I would love it if everything would play nice together. I currently use an XSI and Max hybrid workflow and it would be great if I could get them to interact without depending on importing and exporting OBJS. There is the FBX format, but again it doesn't always work out so well.

With that being said I really wish there was something better than the OBJ we can start using as the standard file format for meshes. It would be nice if they would hold more information besides just the mesh and UV coordinates. It would be great if they retained multiple UV sets across channels and better texture information (more than the .mtl). Better formats have come along but nothing ever caught on. The OBJ is really old now and if all the packages would adapt a better file format it would be a step in the right direction.

Where do you see yourself in the next ten years? Also how do you think technology will advance by then?

Wow tough question, hopefully still making great art! I try not to think too much about my career other than to always give 110%



and try to challenge myself on a daily basis. As for technology, who knows? The sky's the limit! Hopefully things will get more seamless and faster. Maybe one day working without any polygon limitation would be good or, even better, possibly the invention of a new way to work altogether.

What is the most fun part of creating a character?

I honestly enjoy all aspects of character creation. It's especially rewarding closer to the end when you are seeing it all come together. I enjoy texturing as much as modeling so it's really awesome when you see the two merge together forming the final result!

What does it take to be a good character artist?

Dedication and a strong foundation! A good humble attitude can't hurt either. I'm not a fan of egos in the industry. It's always good to stay grounded and focus on your work.

JASON MARTIN

For more from this artist visit:

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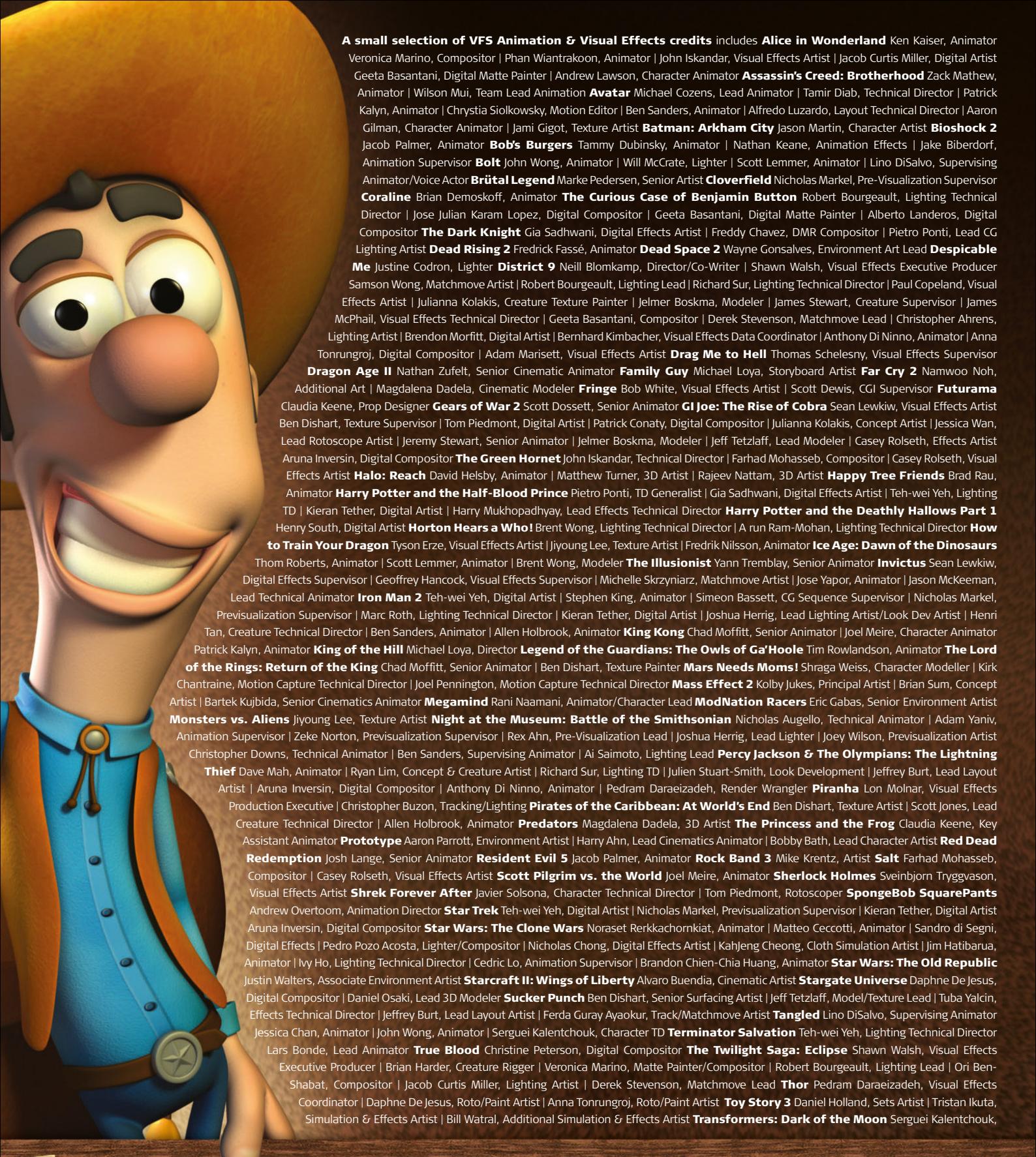
Interviewed by: Jonas Pilo



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A small selection of VFS Animation & Visual Effects credits includes **Alice in Wonderland** Ken Kaiser, Animator | Veronica Marino, Compositor | Phan Wiantrakoon, Animator | John Iskandar, Visual Effects Artist | Jacob Curtis Miller, Digital Artist | Geeta Basantani, Digital Matte Painter | Andrew Lawson, Character Animator | **Assassin's Creed: Brotherhood** Zack Mathew, Animator | Wilson Mui, Team Lead Animation | **Avatar** Michael Cozens, Lead Animator | Tamir Diab, Technical Director | Patrick Kalyn, Animator | Chrystia Siolkowsky, Motion Editor | Ben Sanders, Animator | Alfredo Lizardo, Layout Technical Director | Aaron Gilman, Character Animator | Jami Gigot, Texture Artist | **Batman: Arkham City** Jason Martin, Character Artist | **Bioshock 2** Jacob Palmer, Animator | **Bob's Burgers** Tammy Dubinsky, Animator | Nathan Keane, Animation Effects | Jake Biberdorf, Animation Supervisor | **Bolt** John Wong, Animator | Will McCrate, Lighter | Scott Lemmer, Animator | Lino DiSalvo, Supervising Animator/Voice Actor | **Brütal Legend** Marke Pedersen, Senior Artist | **Cloverfield** Nicholas Markel, Pre-Visualization Supervisor | **Coraline** Brian Demoskoff, Animator | **The Curious Case of Benjamin Button** Robert Bourgeault, Lighting Technical Director | Jose Julian Karam Lopez, Digital Compositor | Geeta Basantani, Digital Matte Painter | Alberto Landeros, Digital Compositor | **The Dark Knight** Gia Sadhwani, Digital Effects Artist | Freddy Chavez, DMR Compositor | Pietro Ponti, Lead CG Lighting Artist | **Dead Rising 2** Fredrick Fassé, Animator | **Dead Space 2** Wayne Gonsalves, Environment Art Lead | **Despicable Me** Justine Codron, Lighter | **District 9** Neill Blomkamp, Director/Co-Writer | Shawn Walsh, Visual Effects Executive Producer | Samson Wong, Matchmove Artist | Robert Bourgeault, Lighting Lead | Richard Sur, Lighting Technical Director | Paul Copeland, Visual Effects Artist | Julianna Kolakis, Creature Texture Painter | Jelmer Boskma, 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THE GALLERY



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we feature:

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Alex Stratulat

Dani Garcia

Thaddeus Maharaj

Kenichi Nishida

Ganzha Maksim A.

Victor Hugo Queiroz

Kleber Darcio

Maxim Goudin

Bruno Hamzagic



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The model based on the concept by James Hawkins

“Gremlin” 2011



GREMLIN

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Concept by: James Hawkins

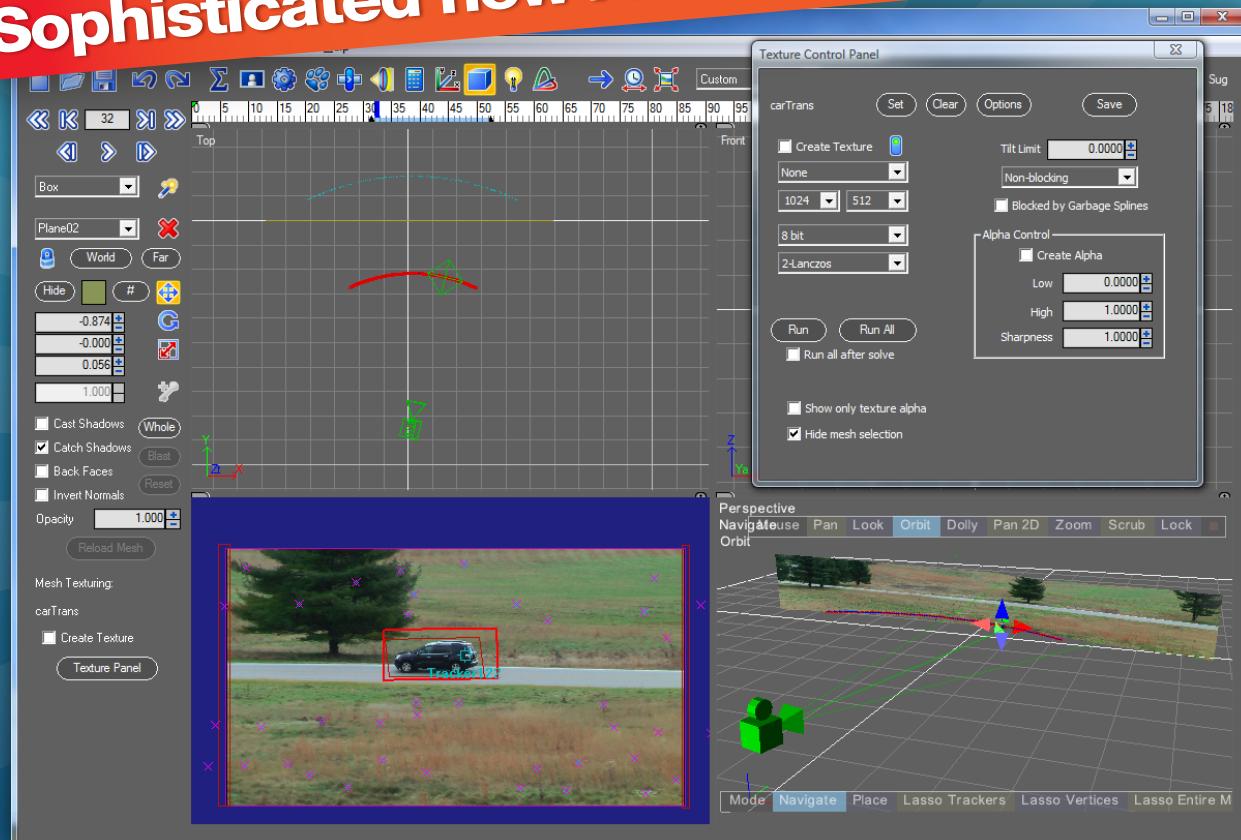
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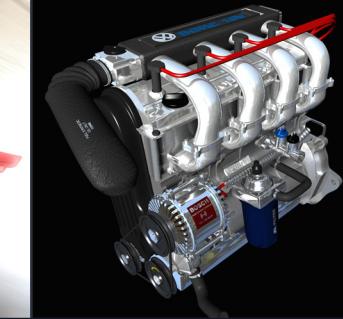
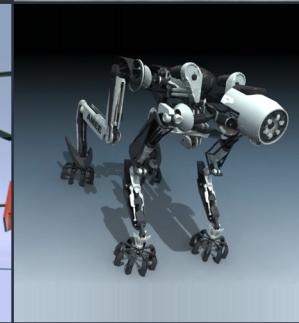
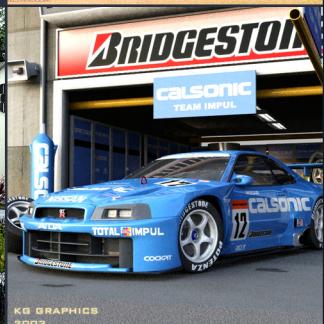
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MODELING FEATURES OF THE HUMAN ANATOMY

CHAPTER 2 - EYES



Modeling the features of characters is something that has caused problems for many artists over the years. A good model can easily be spoiled by an incorrectly modeled feature, such as a hand or an ear. This eBook offers a step-by-step guide to help you make sure you never struggle with feature modeling again, presenting detailed chapters that have been written specifically for 3ds Max, Maya, Cinema 4D and modo.

COMING UP IN THIS ISSUE...

This month our artists will show you how to model eyes.

So if you're interested in seeing the second chapter of this great series, please flip to the back of this magazine and enjoy.

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 MAYA - PAGE 078

 CINEMA 4D - PAGE 082

 MODO - PAGE 088

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Creating the Concept and Modeling

CHAPTER 2 | NEXT ISSUE
Mapping

CHAPTER 3 | JULY ISSUE 071
Texturing

CHAPTER 4 | AUGUST ISSUE 072
Rendering and Presentation



LOW POLY CHARACTERS

Low poly characters with painted textures can seem a little old school at times, but in this series Tamara Bakhlycheva embraces the old style and shows us how to do it well with fascinating results. In this series Tamara will walk us through the entire process from the basic modeling through to the texture painting and posing. Most of the steps will be taken in Maya, but there will also be an opportunity to look at the benefits of using other pieces of software in your workflow.



CHAPTER 1 - CREATING A CONCEPT & MODELING

Software used: Maya, Photoshop, ZBrush, Deep Paint, Marmoset Toolbag, Adobe Premiere & Faogen

My name is Tamara Bakhlycheva and I'm a freelance character artist also known as First Keeper. This is my first tutorial about making an "old school" low poly 3D character. But what does "old-school" exactly mean? Simply put, it means the model is not going to contain many triangles and it will have full hand-painted Diffuse textures, Specular maps and Glow maps but no Bump or Normal maps.

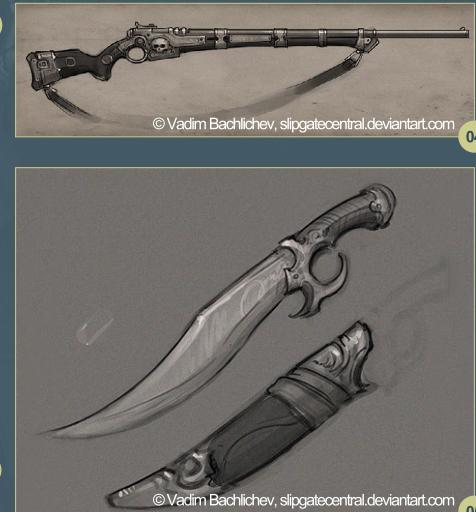
My tutorial will start with the basic modeling steps and I'll try to show the tricks I use for creating good looking models, hand-painted textures and for presenting the image well upon completion. It may be different from your own pipeline and I don't claim to be 100% right on all aspects, but I'll share my workflow and I hope that some of these tips will be useful for you.

Here is a list of software that I'm going to use:

- 1) Maya
- 2) Photoshop
- 3) ZBrush
- 4) Deep Paint
- 5) Marmoset Toolbag
- 6) Adobe Premiere
- 7) Faogen
- 8) Google!

MODELING

The first step in creating a character is an idea or concept art. Unfortunately concept art isn't my strong point, so I think you would be better off learning about this from a different artist. If you're going to create a non-commercial character you can use another artist's concept. Most 2D artists would be happy to see their character made in 3D, just don't forget to ask the author's permission. So I did. I decided



to use a gorgeous series of concepts of a character called the "Demon Chaser" made by Slipgatecentral (Vadim Bakhlychev - slipgatecentral.deviantart.com). These were made for Dominance War III but were never created in 3D (**Fig.01 – 07**).



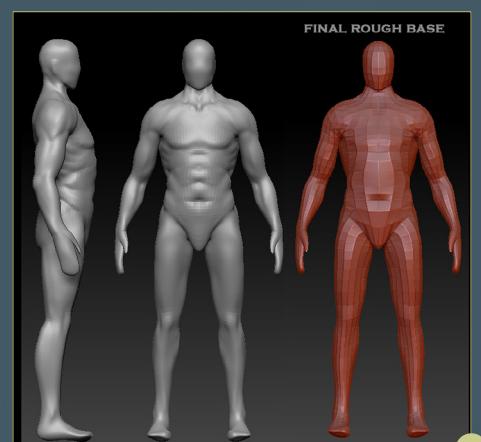
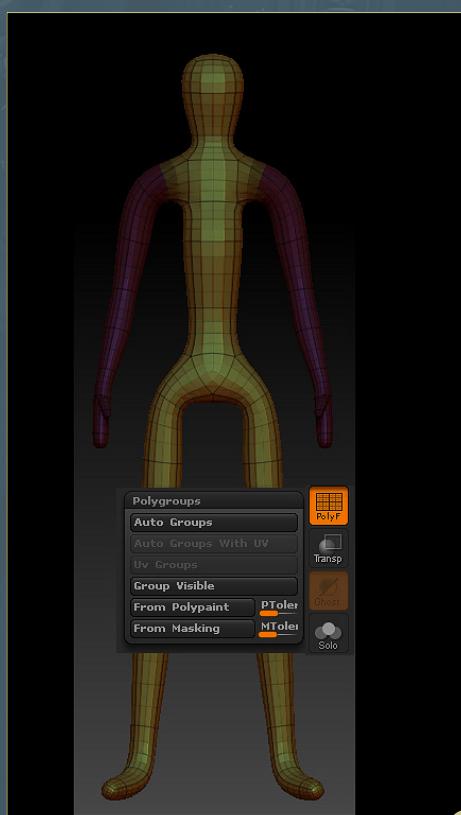
These concepts have a perfect detailed density and also provide a good reference for human anatomy. Before I start working on each model I try to analyze the concept carefully. I think about how I am going to build it step by step. How many parts are there? How will these parts be connected to each other? Sometimes I color-fill the concept and each different color shows a separate part of the mesh (Fig.08).

If you make models to help yourself practice, try to give yourself some technical limits: an approximate poly-count and amount of textures and their resolutions can be limited fairly easily. I decided to make this model within the 7000 triangles limit, and with 3 textures: weapons (1024 x 512), body (1024 x 1024) and face (512 x 256). That's actually a little too old-school, but why not. Another point here – this guy wears a coat and the coat needs to have duplicated polygons because most game engines don't have double-sided materials, so areas like the coat with double faces can add polygons to your count.

ZBrush is a great tool for creating simple human or monster structures. I made a simple base using ZSpheres and the Move, Scale and Rotate tools. Don't forget to switch on Symmetry (X) while you build your rig. You can always check how the structure will look in Polygonal mode. To do this just push the A button or click Preview in the Adaptive Skin menu. All tool menus are usually placed on the right side of the viewport (Fig.09).

After I had done this I made an Adaptive Skin with a Density of 1 and added two additional SubDivs (Ctrl + D) (Fig.10).

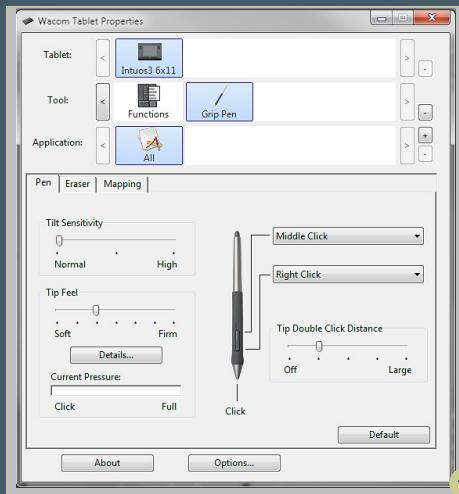
The next step is the polygroup settings. Polygroups allow you to hide things easily and check the body silhouette. Make a mask by hand by drawing while holding Ctrl (you can erase by holding Ctrl + Alt) then blur it and create a group for masking. You can then clean the mask in the Masking menu. The PolyFrame



button on the right side of the workspace allows you to see colored polygroups along with the wireframe (Fig.11).

Next I made a rough sculpt of the human body. It's very useful to find some anatomy references at this point. The main task here is to recreate correct forms, proportions and silhouette. Keep the mesh simple; don't go too far with details as it's not necessary at this stage. Good tools at

this point are the Move and Clay brushes. Press Shift + Ctrl and click on body if you want to hide the arms and just work on the body. To unhide everything just press Shift + Ctrl and click on an empty area. This is how you work with polygroups. When you are satisfied with your base mesh you can repotologize it in ZBrush or Topogun, or just export your model into Maya in a low Sub-Division level like I did (Fig.12).

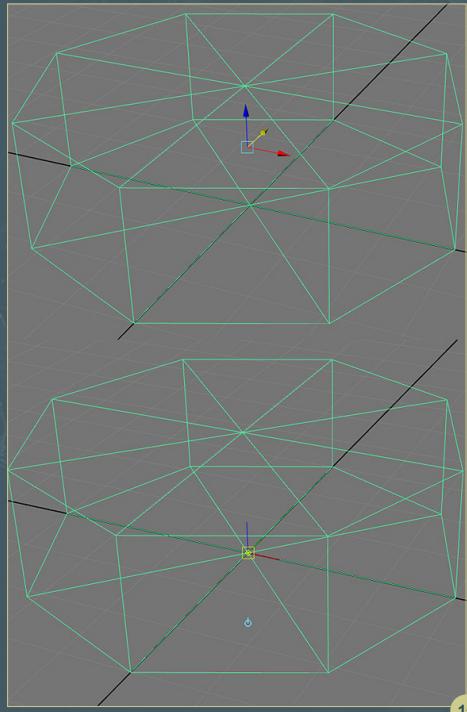
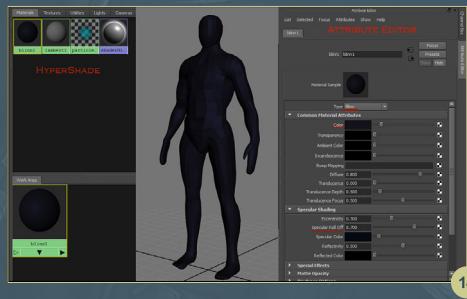


I use hot keys, some of them custom. I strongly recommend using hot keys and the main Maya menus for comfortable and fast work. Maya works perfectly with a Wacom pen tablet, all you need is to bind the middle mouse click on to the top button of the pen, which is by default a left mouse double-click (Fig.13).

After importing the model into Maya go to Hypershade and create a new Blinn material. In the Attribute editor (Ctrl + A, or double click on material) change the color to a dark color. This kind of material is nice for the early modeling stage because it shows the silhouette well and, at the same time, you can see the hard edges of the topology (Fig.14).

I also deleted the left side of the model and made it a Duplicate special (in the Edit menu), but before doing that be sure that the model's pivot and model is located at the center of the grid. You will be forced to edit the pivot position often. To do this press and hold X to activate Snap to Grid mode and move the pivot to the cross (press Insert to exit this mode) then apply a Freeze Transformation to the model (Modify menu) (Fig.15).

During this stage I keep in mind two things: silhouette and topology. The silhouette is a very important thing for 3D characters. It's like the foundation for a future house and it has to be strong. I put topology in second place because in the block-out stage it's not very important,



but you still need to be moderate and make sure you don't add too many polygons. When you finish the block-out you'll need to pay more attention to topology (Fig.16).

Here are a few hints as to how to keep good and clean topology:

- Try to keep the mesh in similar size quads. At the same time feel free to use triangles. Actually we'll convert our mesh to triangles for texturing and rendering because a triangle is the true form of a polygon and game engines see only triangles. Quads are just for human comfort.

- Every polygon should work for silhouette – don't add too many polygons.
- Add additional loops to bending areas (elbows, knees).



- Some polygons can be extruded in new objects later. Place edges loops in some places as a future base for extruding a new object. For example, if I know that a specific polygon row is going to be extruded as a belt, I make sure that the thickness of the base row will be the same as the thickness of the belt.

Here are the tools that I used to create the model:

- Soft Selection. Press B and move the sub-components. To adjust the influence hold B + the left mouse button and move the area.
- Split Polygon tool and Split Selected Edge Ring. These are in the Edit Mesh menu or in the Shift + right-click menu. It's much better to bind it to your own hot keys. These tools add new edges.

- Sculpt Geometry tools (Mesh menu). This works like some of the brushes in ZBrush. The most commonly used is the Relax tool. I like it a lot because it's a quick way to make your topology smooth and consistent (Fig.17).

When the rough body base was done I started to add new details, like the pants and sleeves. To do this you need to refer back to the concept (Fig.18).

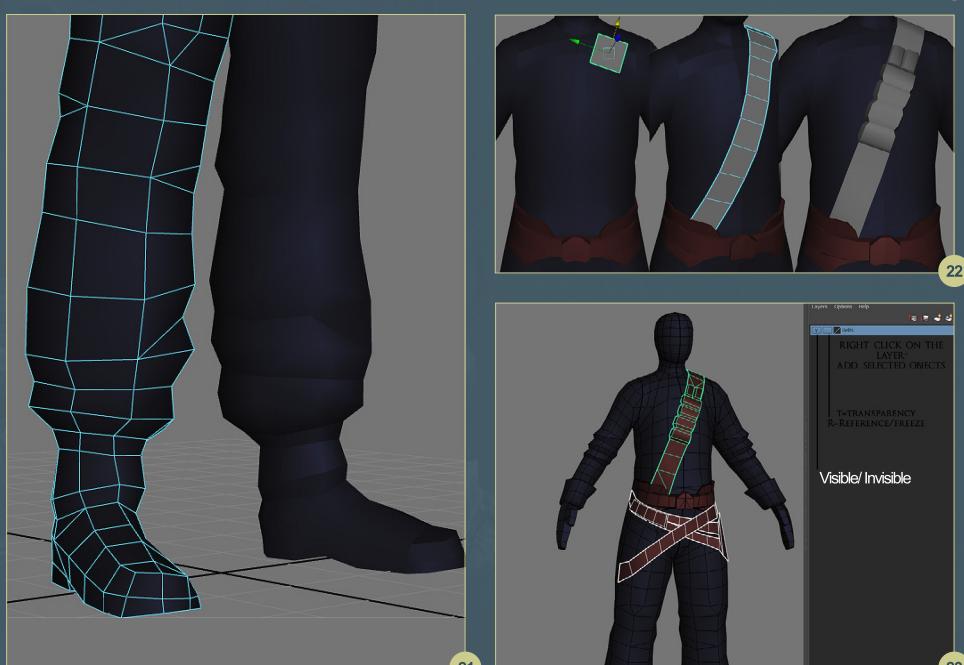
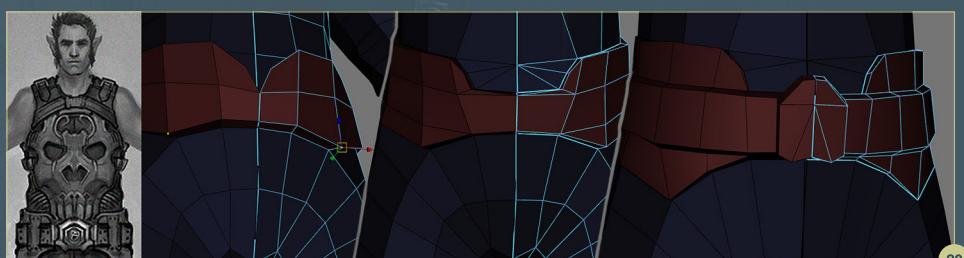
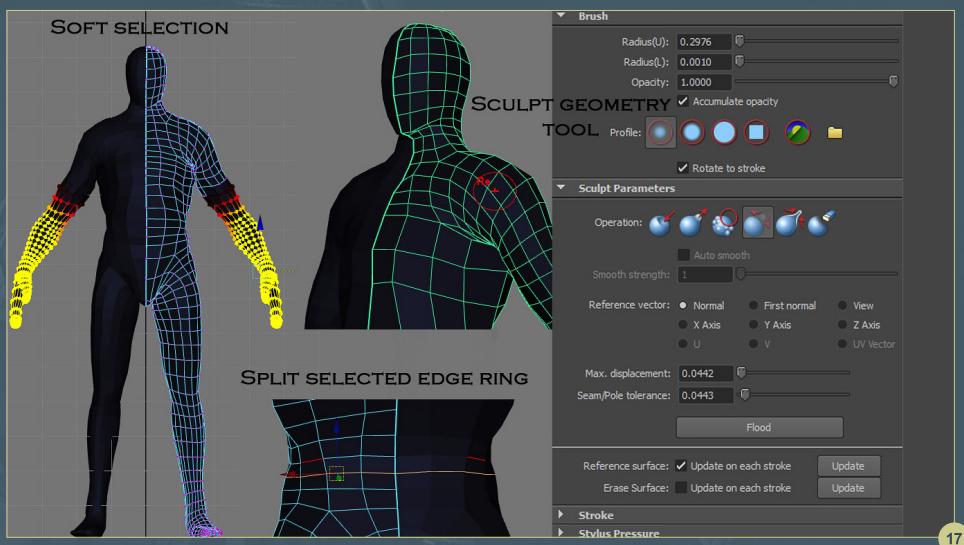
The next step is extruding the new details. As I mentioned before when talking about the topology, try to place edge loops in places where you're going to extrude new details. On the picture you can see what I mean (Fig.19).

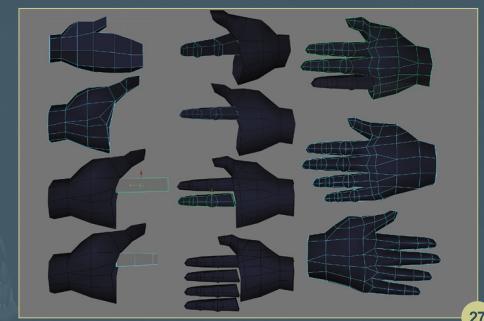
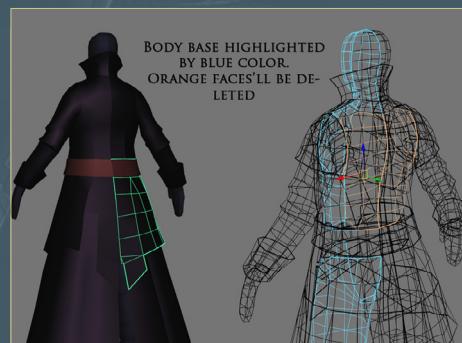
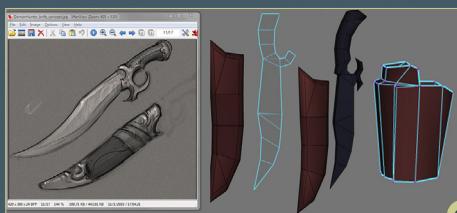
First, you need to duplicate the right part of the body and select the belt faces. Next invert the selection (press Shift + the left mouse button) and select all of the model using the Marquee tool. Delete selected polygons and slightly scale the belt and extrude it. I also assigned another material and made a duplicate special. I added new details and used Snap to Points (press V) to attach the belt to the body even if they are separate objects. This is the most common type of snapping and you'll use it all the time (Fig.20).

As soon as you are satisfied, start assigning soft and hard edges (Shift + right click the menu in Edge mode). That'll help in the future when texturing. For example, hard edges on the toes will look great with a metal texture (Fig.21).

Another way to add new objects is to create a simple primitive plane (Fig.22).

The creation follows the same pattern from here onwards. You need to add the details step-by-step. Now it's time to put our belt straps on their own layer. Layer systems are very helpful if you want to keep things in order. It also helps you to hide objects or switch Transparency on and off (Fig.23).



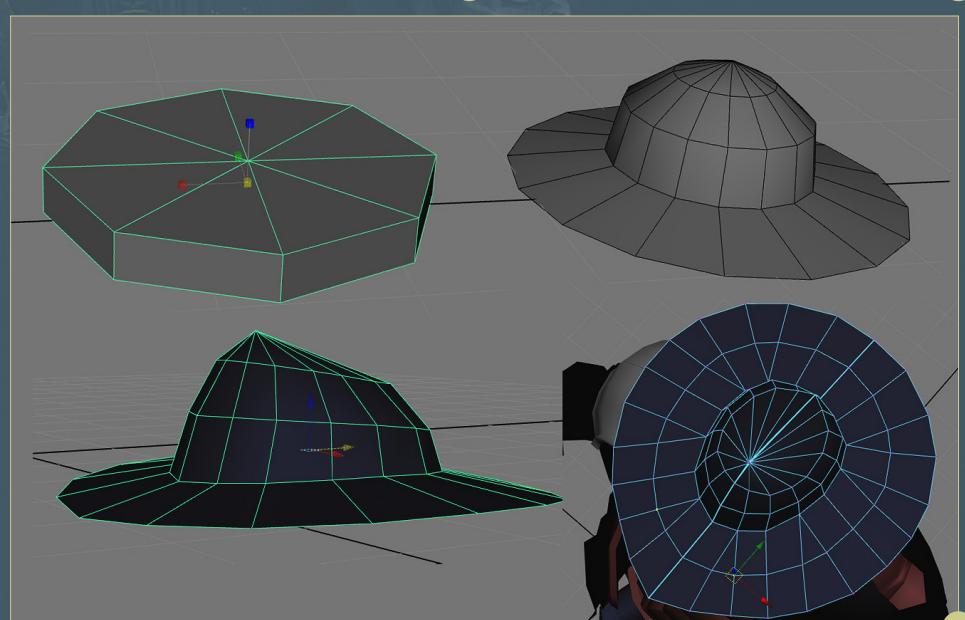


Always make sure that you have a picture of your concept open. I have two monitors and put my concept on my second monitor (Fig.24).

I used the same tools as I have already mentioned to model the trench coat. I didn't delete the faces from the back of the character yet as I'll do it later. I also merged extra polygons on the coat, because in the next step I'll add another trench coat plane above this one (Fig.25).

I added to the trench coat around the neck, collar and back. After this was done I could delete the original back polygons from the body mesh. I also stressed folds by creating hard edges (Fig.26).

Now it's time to make the hands. I started with a simple mesh and did the thumb and palm first. I used box primitives to make the fingers. I split the phalanges and added additional edge loops.



After that I duplicated the finger three times and scaled and attached these fingers to the hand (Fig.27).

Here is a simple block-out of the shoulder pad (Fig.28).

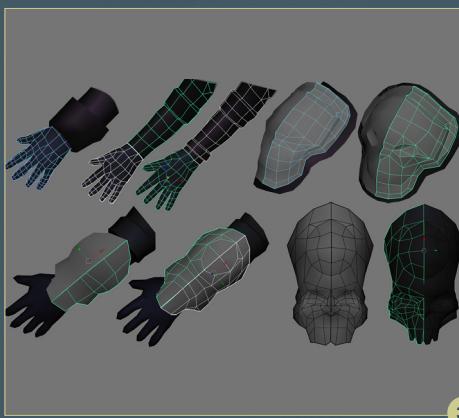
A good starting point for a hat is a simple cylinder that you can then scale and extrude. I also used the Split Polygon tool here to add new vertices on the hat rim, because it was too angular (Fig.29).

I started with a plane to make the neck scarf (Fig.30).

Here is the workflow for the character's right hand. As you can see here that the left hand is finalized. I used this mesh for both hands, but according to the concept it should be a little thicker. The shoulder and hand armor geometry is pretty simple since most of the detail is going



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to be painted on the texture later. Pay attention to the hard edges as they will work well texture the texture in the final render (Fig.31).

Another thing to keep in mind is the polygon count. The main parts of every humanoid model are the head, shoulders and upper torso. Especially in games with a first- and third-person view. Each time people take a look at a character they focus their sight on the head area. So if you have additional polygons, don't hesitate to use them for a nice, smooth silhouette in that area (Fig.32).

It is worth doing another proportions check after assembling all the details. I created a plane with my concept in the background to create this accessory.

This type of concept is pretty easy to turn into a model. I've created a plane and assigned the concept as a texture. You can switch on

the opacity in the layer options as I mentioned before or use X-Ray mode (menu button on the top of the viewport window). I made the rifle with a single mesh, except the belt which was made separately. I try to plan all edges before extruding. After extruding I scaled the orange area and added a few details. It's a pretty simple way to do low poly weapons (Fig.33).

The same way works for the scatter gun. I just extruded different edges for the top part (Fig.34).

Now it's time for the most interesting and important part of every humanoid character. You can build a beautiful model, but all the attractiveness is ruined if you fail with the character's face. I always give special attention to making a head. Don't be too lazy about fixing areas that look wrong and use references a lot. My base mesh didn't have any triangles, only quads, because I'll import it to ZBrush

and triangles can cause topology issues in this program after subdividing. In the first phase I worked on the lowest sub-division levels and used mostly the Clay and Move tools. Too many polygons at this stage will slow your working process. Forget about details, only think about basic shapes. I made a rough sculpt because I only needed large details here for the low poly shape. You can also repolygelize it in ZBrush or Topogun, or export the base to Maya and fix it there as I did with the body (Fig.35).

This is a shot of the almost-finished model. Now we are ready to unwrap it (Fig.36).

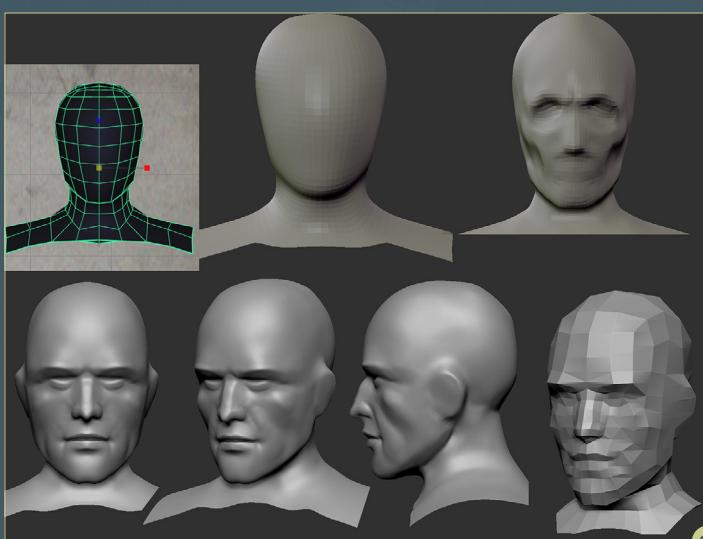
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UDK

CHAPTER 7 - LIGHTING AND POST EFFECTS - A

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Lighting and Post Effects - B

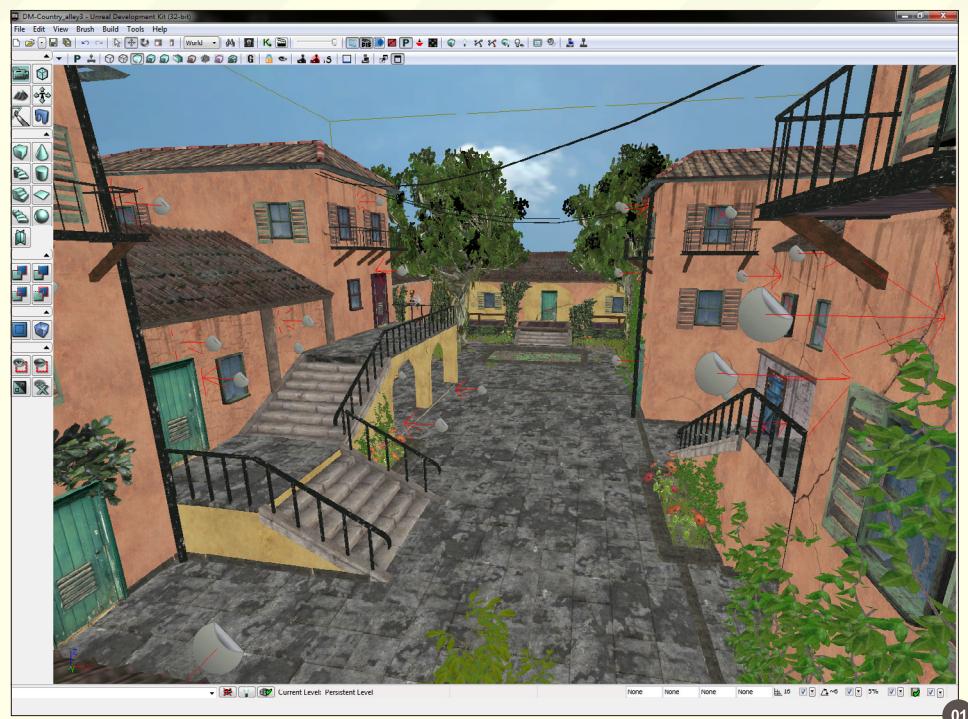
The video game industry continues to thrive and grow at an alarming rate, and is swiftly becoming the most obvious option for employment for anyone in the CG industry. This brand new series of tutorials provides an opportunity for anyone trying to get into the business to learn how to create a basic game level portfolio piece that would impress any potential employer. Using the Unreal Development Kit, UK-based artist Andrew Finch talks us through the entire creation process, from downloading the free software and choosing its settings, to importing and texturing accessories. This really is a must have for anyone interested in gaming or game design.

UNREAL GAMES ENGINE TUTORIAL - CHAPTER 7: LIGHTING AND POST EFFECTS - A

Software used: UDK (Unreal Development Kit)

Lighting has to be my favorite part of any CG art that I do. If done correctly it can really bring your work to life and can make it go from looking ok to looking professional. You should spend as much time as you can lighting your scene and doing the post effects because it will really make or break your portfolio piece. You could spend days modeling and texturing a detailed model only for it to all go to waste because the audience can't see the detail due to a poor lighting setup.

UDK lighting is very advanced and you can create some stunning lighting setups really easily. Recently UDK has introduced "Lightmass" to its tools. Lightmass helps to create realistic lighting by calculating bounce light, similar to what is done in the 3D package renderers on the market today. A scene in UDK could consist of just one light ("the Sun", for example) and Lightmass will fill in the shadows with bounce light. In the past you would have had to manually place lights to fake the bounce light and this would have taken time. So UDK has not only made the process easier and quicker, but the results you get will be a lot more realistic.



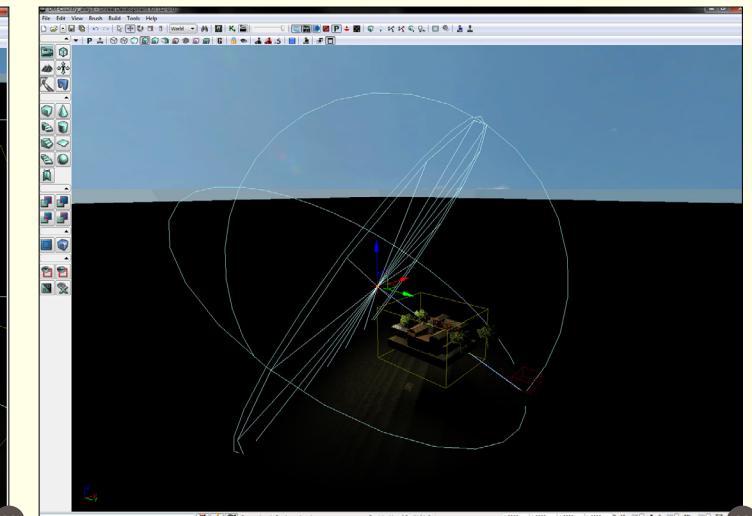
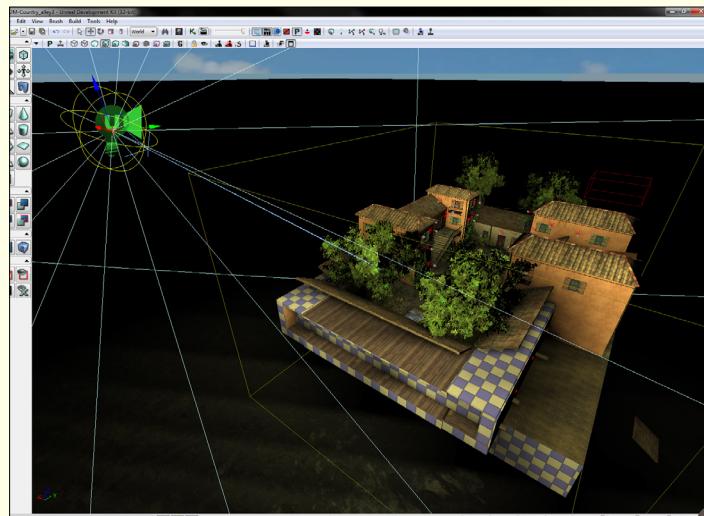
Another important feature I will explain in this chapter is Ambient Occlusion. This process will create a soft shadow when an object is close to another, for example by a wall. This soft shadow really helps the object to sit in the scene and again makes the scene more believable. I will explain this process more later on in the tutorial.

In **Fig.01** you can see the scene with no lights at all. I have deleted the temporary ones previously placed to illuminate the work area. Looking at this image I want to get an idea of where I want the source of light to come from. After a few tests I found the Sun was best placed behind the far building in this image; with the Sun in

this position it casts more interesting shadows across the floor and against the other buildings. You should take time to test your environment and see what works best to give you the most interesting end result.

In **Fig.02** I have placed a spot light high in the sky and pointed it at the middle of the environment. You can tell which direction the light is pointing by the arrow that is emitted from the light, which makes it easier to place. You also get a draft shadow to guide you further.

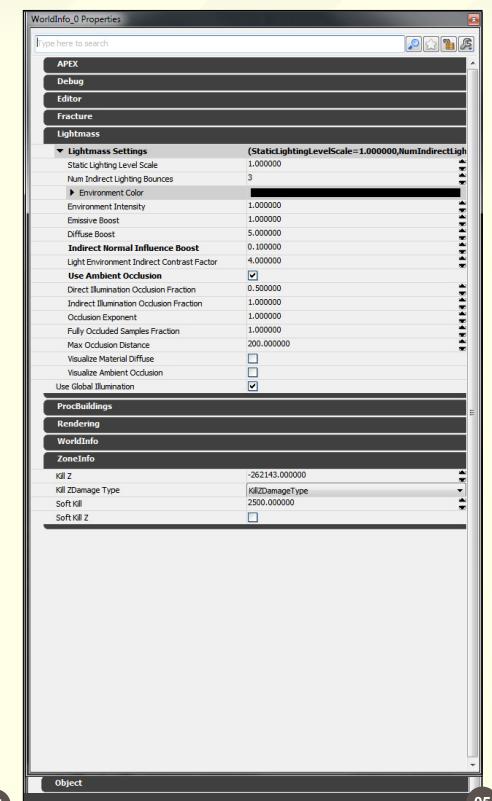
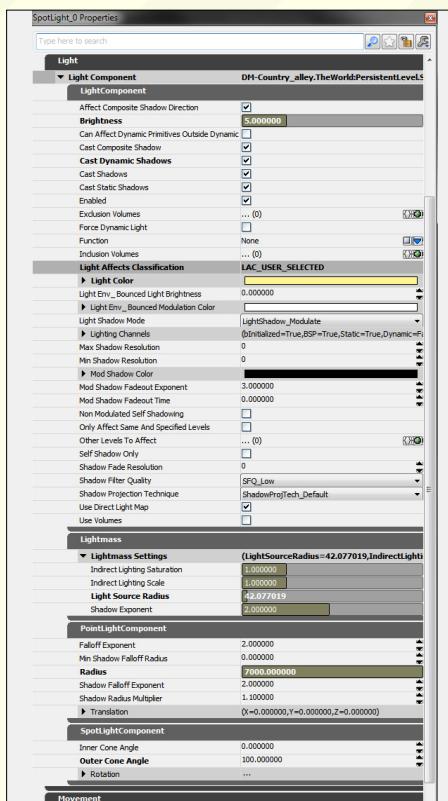
Fig.03 shows the light's radius. You need to make sure the radius encompasses the



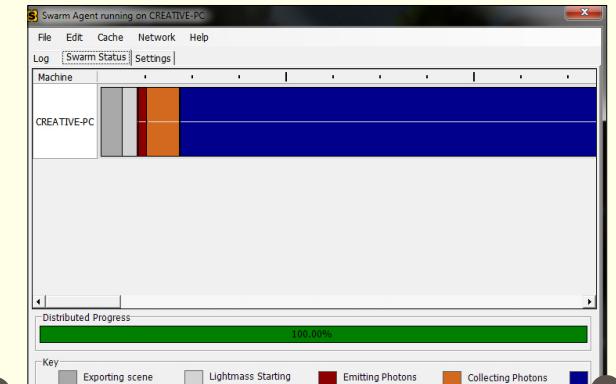
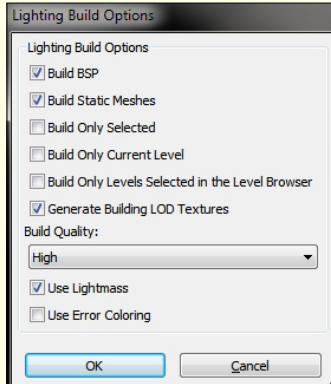
environment because it is the Sun light and should never fade or run out of power. The radius of your light will differ from mine depending on how close or far away your light is in the scene to the floor of the environment.

I haven't changed many of the settings of the light; I kept most of them as default. Feel free to play with the settings and get a feel for what works in your scene. I changed the brightness of the light to 5.0 as I wanted a bright sunny day and therefore needed a powerful light. For the color of the light I went for a warm yellow/orange to simulate the Sun and give the illusion of a warm summer's day. If you want to use my settings for the Sun color the RGB values I used were: R=255 G=244 B=148. In the PointLight Component settings I changed the Radius to 7000 – as explained earlier this setting ensured my Sun light covered the entire environment. Under SpotLight Component settings I changed the Inner Cone Angle to 0 and the Outer Cone Angle to 100, which ensured the light was wide enough to cover the entire environment and I didn't create any hotspots or falloffs. For the Lightmass settings I kept all the settings as default except for the Light Source Radius, which I changed to 42. I got this number by doing draft light bakes and changing the settings until I got a result I was happy with. I found this number gave me the best shadow and quality of light emitted from the Sun spot light. **Fig.04** shows all the settings I used for the Sun spot light.

To enable Lightmass and Ambient Occlusion click View > World Properties (**Fig.05**), scroll down to the Lightmass tab and tick Use Ambient



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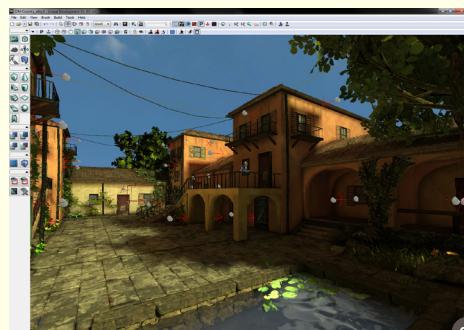
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Occlusion and Use Global Illumination. We will now be able to view the AO within the viewport and use Lightmass to calculate the bounce light emitted from our Sun spot light. Next time you build the lighting you should notice the soft shadows that appear when an object meets another object; they are quite subtle, but very important, shadows. I will point this out more when we have baked our scene. In the Bake Lighting window make sure your build quality is set to High and that this time Lightmass is switched on. Previously we have been switching this off to save time in the build process. Now that it is switched on the build times will be increased dramatically. It is good practice to switch the build quality to Draft to get an idea of

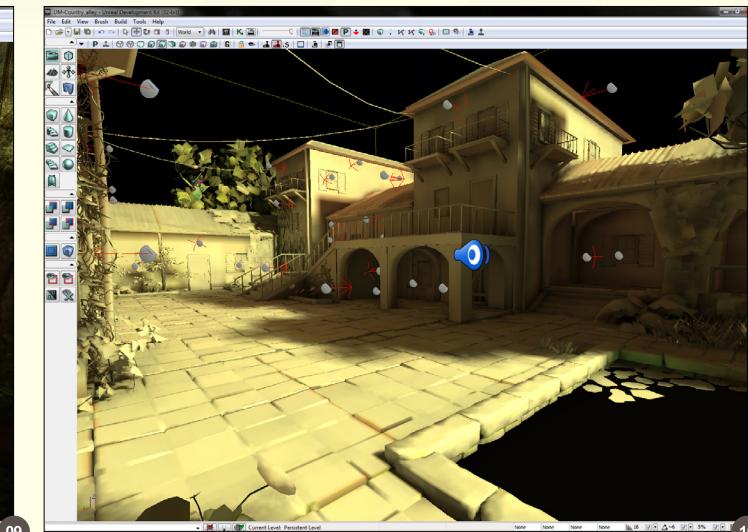
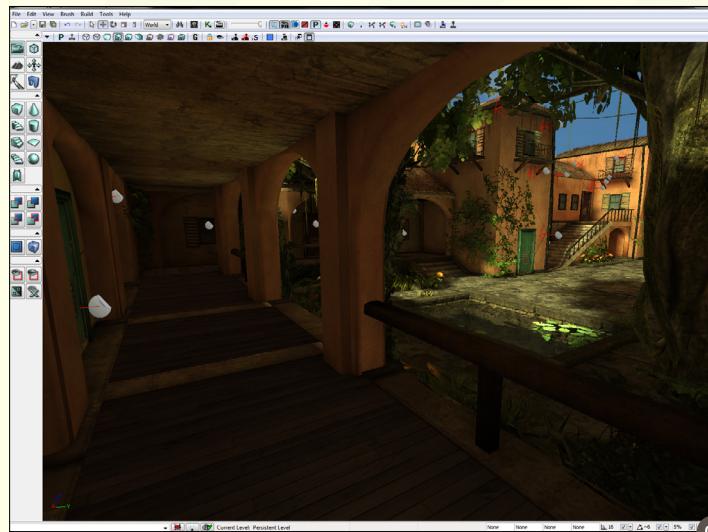
what the final lighting will look like then once you are happy set the quality to High or Production to get the best results (**Fig.06**).

When you click Build after a short time you will notice a new program starts called the Swarm Agent. This program builds the Lightmass calculations and presents you with a progress bar to show that it is actually calculating and not crashed as the process times can get quite lengthy (**Fig.07**).

When the calculation process is over your scene should update and present you with the final lighting for the scene (**Fig.08**). You should see a dramatic improvement in your scene. The



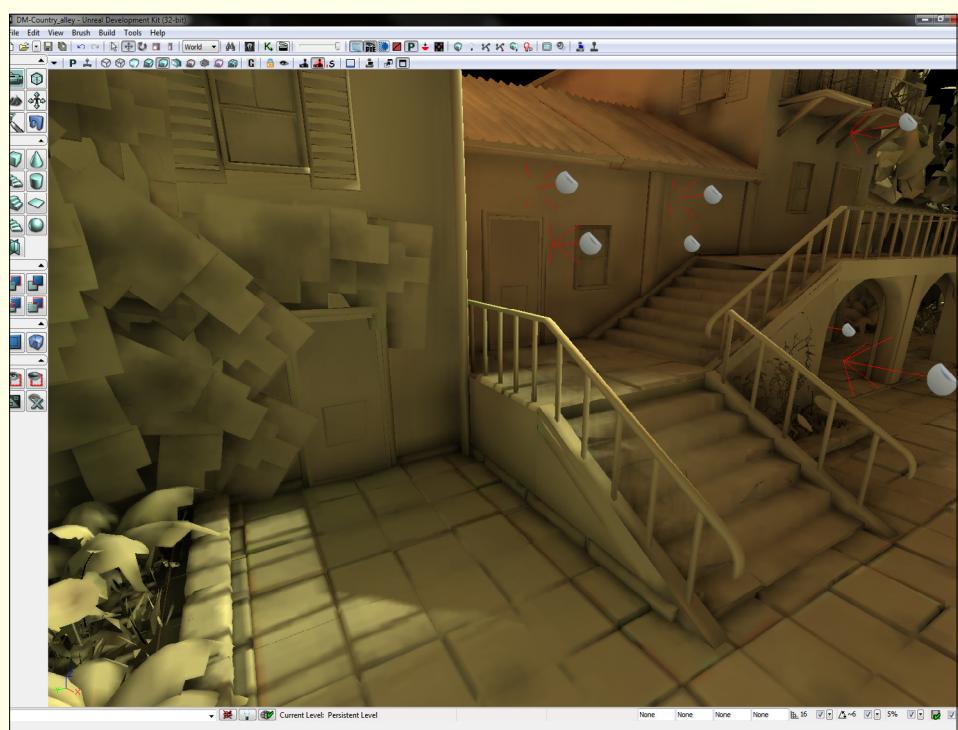
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buildings are illuminated with a warm sunlight glow and interesting shadows from the tree foliage and buildings are being cast across the floor of the environment, creating many points of interest. The scene has immediately jumped to life and now has depth to it.

In **Fig.09** you can see the Lightmass at work. Remember we have not placed any more lights in this scene apart from the Sun light. These areas would have been in complete darkness before Lightmass was enabled. Now the Sun light bounces around the environment and fills the shadows realistically. Remember you have control over how much bounce light is created so you can make these areas lighter or darker depending on the look you are trying to create by adjusting the Lightmass settings in the light properties.

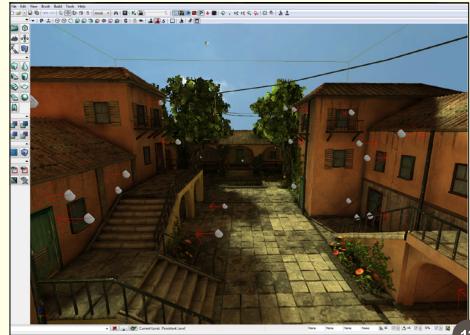
I have switched off the textures in **Fig.10**, which you can do in the Viewport tool bar. This allows us to see the lighting without the distractions of textures and materials. This is



good practice so we can concentrate on getting the lighting correct without any errors that might otherwise go by unnoticed.

Fig.11 also shows the texture-less scene, but a close-up of the corner of the staircase. This is a good example of the Ambient Occlusion at work. Notice the soft shadows behind the drainpipe and in the corners of the geometry – see how it makes the scene so much more realistic and adds so much more depth to the scene.

So this is our final scene fully lit (**Fig.12**). In the next chapter I will cover setting up the post-



processing such as color correction, depth of field, bloom and adding effects such as fog and particles. These elements will add the final polish to the scene and complete this portfolio piece. Until the next chapter play around with the lighting and try to create different moods and atmospheres; it really is the best way to learn. Thanks for reading.

ANDREW FINCH

For more from this artist contact them at:
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CHAPTER 1 | APRIL ISSUE 068
Greek Sculpting

CHAPTER 2 | THIS ISSUE
Greek Sculpture Texturing

CHAPTER 3 | NEXT ISSUE
Roman Sculpting

CHAPTER 4 | JULY ISSUE 071
Roman Sculpture Texturing

CHAPTER 2 - GREEK SCULPTURE TEXTURING

Software used: ZBrush

Hello, welcome to the second part of the Greek Sculpture tutorial. I hope you enjoyed the first part.

Now we are going to learn a little more about the Greek tradition, particularly taking into consideration our subject: the render. How can we render this statue? How did the Greeks and the Greco-Romans finish their pieces? I'll try to answer some questions about this and provide a simple tutorial about how to achieve a good quality render.

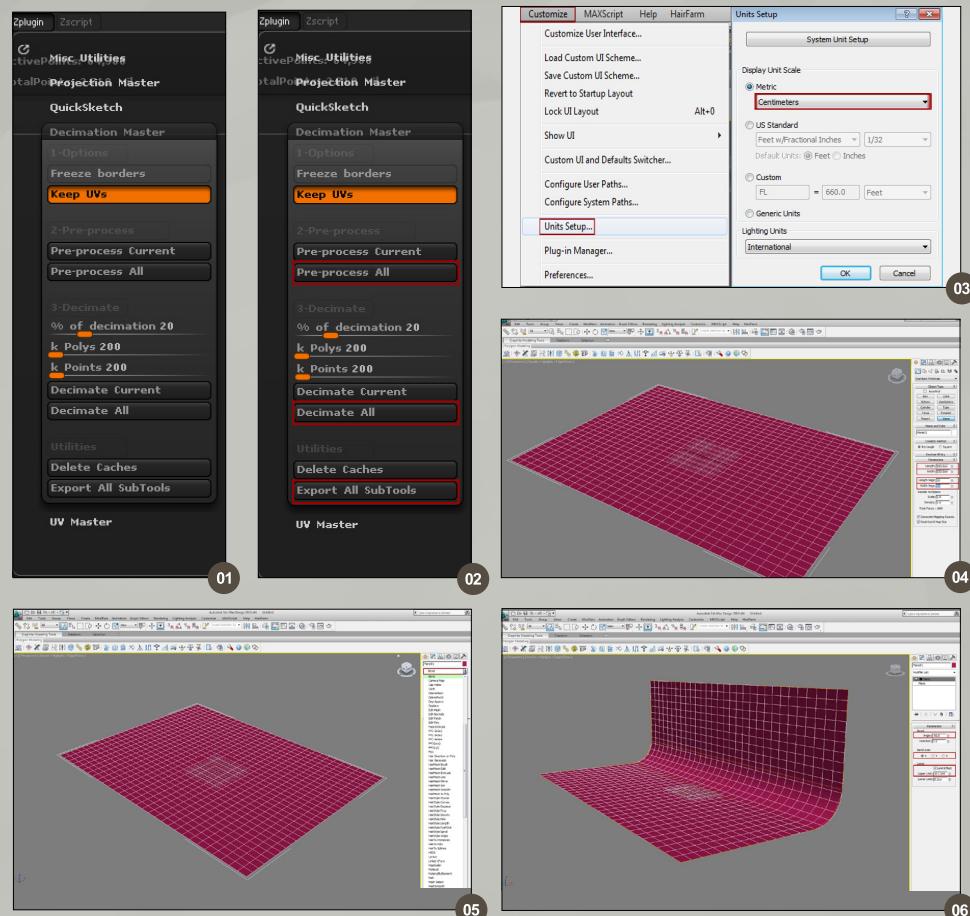
ANALYZING THE SCULPTURES

When studying the Greek traditions we can see that their sculptures were predominantly finished in marble. Also you will find that a lot of the sculptures were actually painted originally and, at the very least, the hair and the eyes were painted. With this in mind my intention was to make a marble statue with some painting in the hair and maybe in the eyes. I didn't want to make the sculpture look like it is totally finished and wanted it to look as if it has become worn over time. So it was clear that I would be adding some dirt and some faded paint.

It was important at this point to also think about the light. Of course the Greeks didn't have to think about lighting as their sculptures were generally used in external environments. However we don't want to deal with the lighting in a careless way, but instead concentrate on intensifying the tension and mood of the scene.

PREPARING THE SCENE

Once you know a little about the history it's time to start our render. The first thing we need to do is create some lighting sets to find the best position and intensity for the lighting. The render is going to be done in V-Ray, so to start we



need to export the model into 3ds Max. To do this, select the model and the division that has all the information that we need. You don't need the high resolution model at this point as this is just to test the lighting.

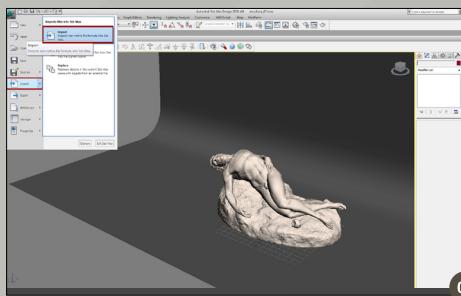
Now, in the ZPlug tab, open the Decimation Masters plug-in (if your ZBrush doesn't have it, download it from the Pixologic site). This plugin will maintain all the model information, but will reduce your poly count a lot (Fig.01).

When you open this plugin you can see the option called "% of Decimation 20". This option gives us the option to choose what percentage of the actual polygons we want when the program finishes its calculations. So let's start with 20% of my polygons, which means if the model has 1 million polygons, in the final version it will be 200,000 polygons without losing any detail information. When it's done we need to pre-process all the subtools. After the calculation is done we only need to use

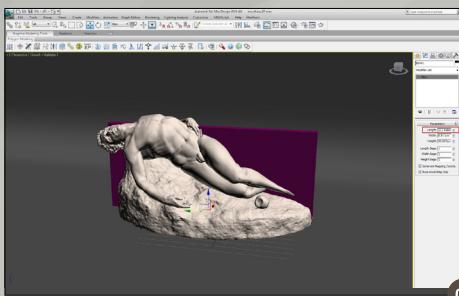
the Decimate All button and our model will be reduced. The next step is to click on Export All Subtools and save all the subtools as an OBJ file (Fig.02).

In 3ds Max it is better to work with a real scale. To do this open the Customize tab, and then click on Unit Setup and configure the scene as shown in Fig.03. Now our scene is configured to cm. The next thing to do is create our infinity background. I decided to do this to simulate studio photography. To start this we simply need to create a plane object in the Standard Primitive tab and set the scale of this object as in Fig.04.

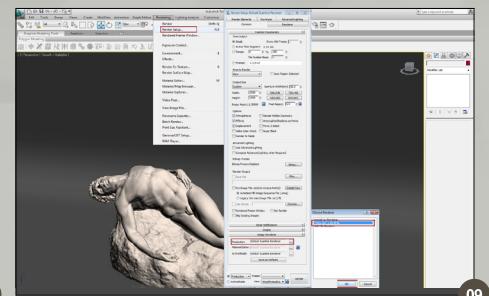
Now to apply a curvature to this plane to make our studio background, open the modifiers list and pick the Bend modifier (Fig.05). Next adjust the Bend Axis to X, the Angle to -90, and turn on the Limit Effect to find a good value to make a smooth curvature. Once you have done this your background is done (Fig.06).



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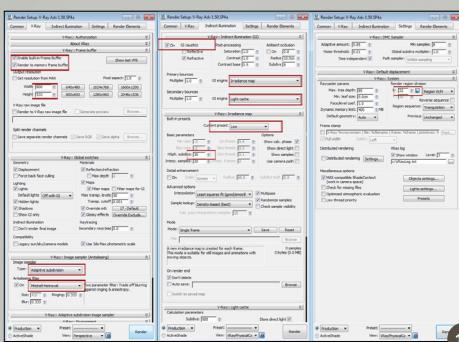
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When this is done you can bring in the statue. To do this go to Import and select your OBJ. When you have done this adjust the scale of the statue to fit the background (Fig.07). In this case I used a simple box to work out a suitable scale for the model. I decided to make the statue a little bigger than a real person, a bit like a monument (Fig.08).

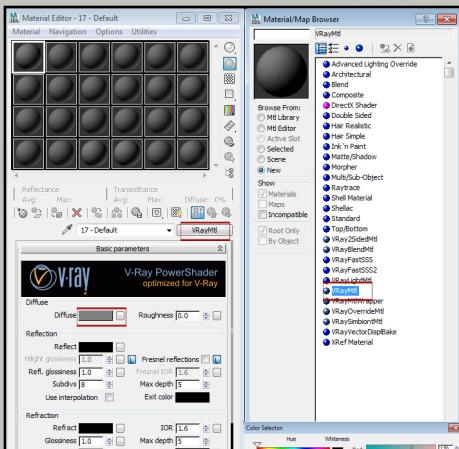
LIGHTING TESTS

Once this is done we can test and find the best lighting for our scene. First we need to open the Render Setup then go to Assign Render and in the Production section pick V-Ray (Fig.09). Now we can adjust a few settings in V-Ray to make quick renders to test our lighting without needing to wait a long time to see the results.

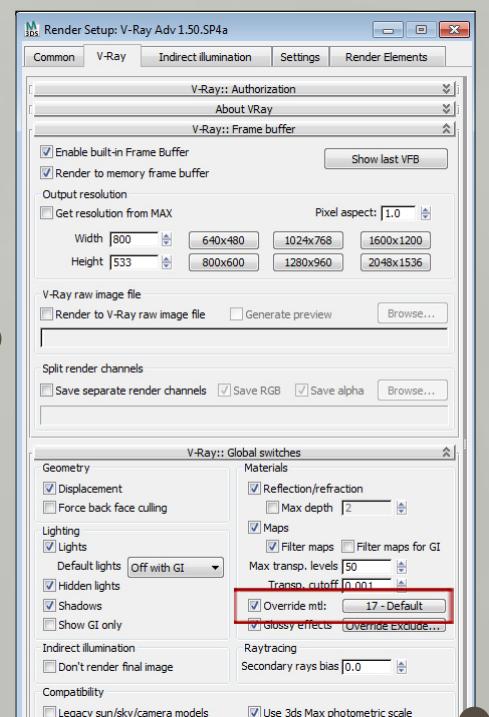
By adjusting the settings to the way they are in Fig.10 we will have everything we need to run a test. The other thing we need to do is create a simple material and apply it to all the models. Open the Rendering Material Editor



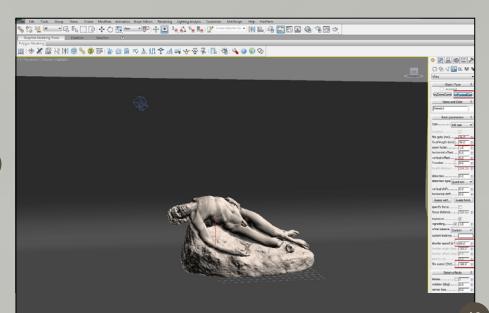
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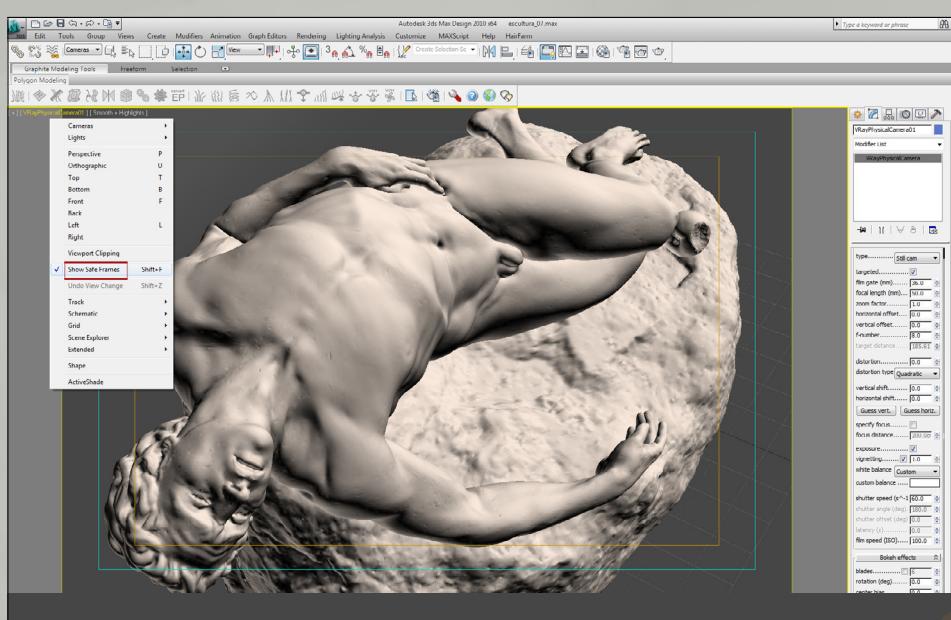
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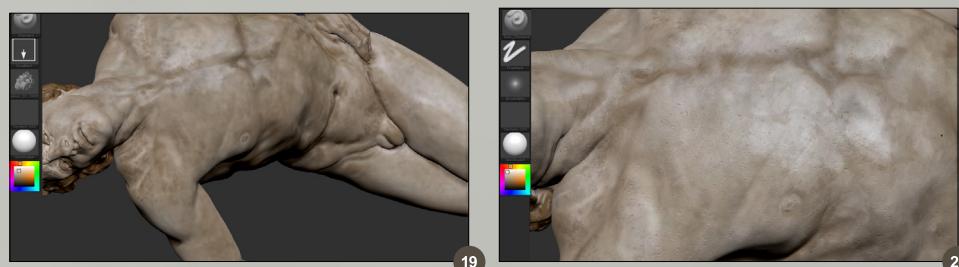
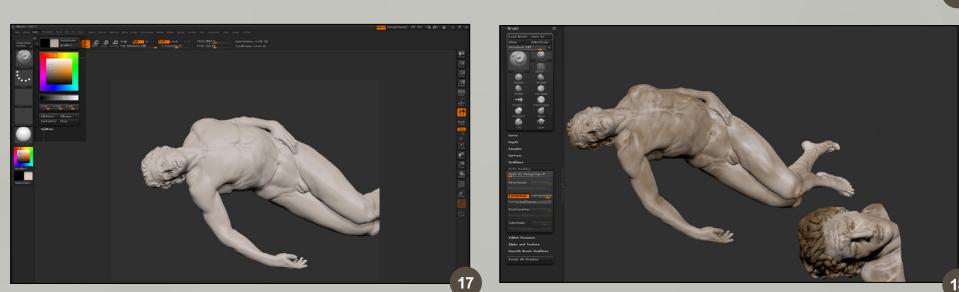
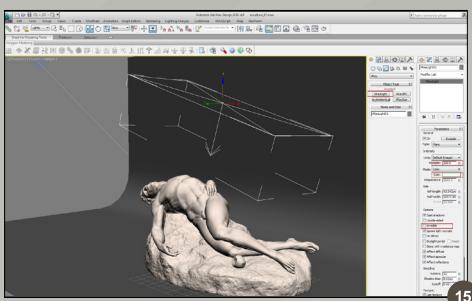
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tab and create a V-Ray material with a light gray diffuse color (Fig.11). After that is done put this material in the "Override mtl" slot in the Global Switches tab (Fig.12). Now we can create a V-Ray camera, configure it to 50mm and change some of the configurations like the aperture (f-number), Iso and shutter speed (Fig.13).

By clicking the C button we can see through our camera now. I like to turn on Safe Frame to see the exact proportion of my render in the viewport (Fig.14).



Next turn on the Cavity brush by going to Brush > Auto Masking > Cavity Mask. This tool will simulate a dry-brush effect. With this tool we are going to paint the overall color of the model (Fig.18).

Now it's time to paint some imperfections and dirt into the model. To do so pick the Standard brush and choose the Drag Rect stroke option. For the alphas I searched the web for some

images of dirt and worn paint and projected them onto the statue. Sometimes I do this with a low RGB value to create some overlays (Fig.19).

Using the Dam Standard brush (you can find it in the lightbox/brushes) add some little scratches to the model to create a naturally scratched look (Fig.20).

Now to finish the model we are going to apply some Surface Noise. The tool to do this is located in the Tool palette. By changing some of the parameters you can achieve the look of old rock. Once you are happy with the effect all you need to do is click Apply to Mesh (Fig.21). Then repeat this texturing process on all the subtools (Fig.22).

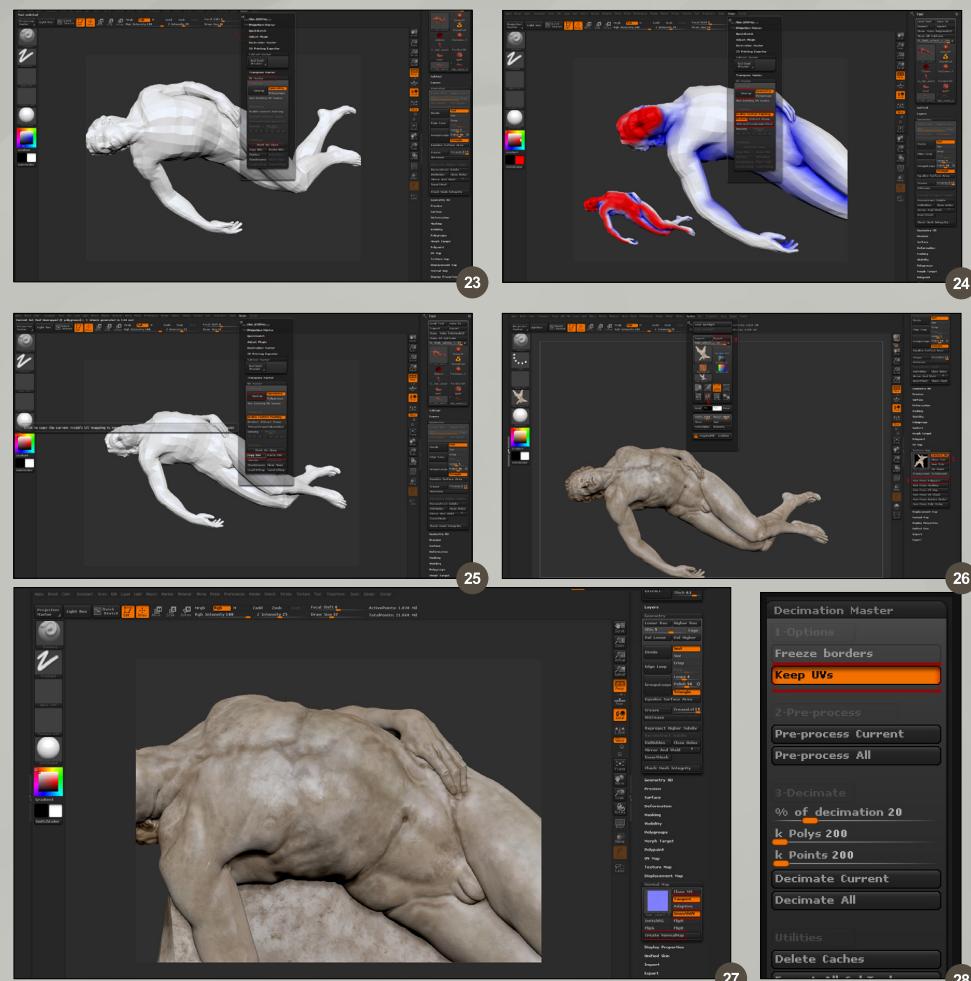
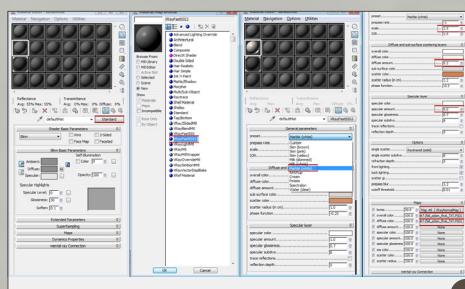
Now it's time to create our maps and send the model to 3ds Max. The first thing we need to do is to create a UV for our model. For this tutorial we'll create a simple UV using UV Master. This is a plugin for ZBrush that creates UVs easily and quickly.

Open the UV Master in the ZPlugin tab. Then click on Work On Clone; this will duplicate your model (Fig.23). Now with the copy of the model open click on Enable Control Painting and click on the Attract From Ambient Occl button. This will calculate the UV from the Ambient Occlusion. After that select the Protect button and paint on the area that you want to protect (Fig.24).

Then you only need to push the Unwrap button and click in Copy UVs. Now in the Tool palette select the original model (before the copy) and in the UV Master Palette click on Paste UV (Fig.25). Now our model has a UV to apply the textures to.

Now we need to convert the Polypaint to color map to apply the textures. Go to Tools > Texture Map and click on New From Poly Paint. This will convert the color information into one map. Then we can export this map by clicking on Clone Txtr and then going to the Texture tab and clicking Flip V (to invert our map) and then Export and Save (Fig.26).

I want to export one more map to help us in the 3ds Max. I'll export a Normal map as well containing the finer details; this way we don't need to export the full resolution model into 3ds Max. To do that I selected the division I wanted to export – in this case it was the division 5.



Everything above this will be converted to normal map information. To create the map open Tool then the Normal map tab and then activate the Tangent and Smooth UV option. Then click on Create Normal map and the map will be created (Fig.27).

To export this map use the same process as you did for the Color map. Now export the model again using the same process as you did in the beginning using the Decimation Master. Don't forget to activate Keep UVs (Fig.28).

SHADING

Back to 3ds Max. We need to change the old model for the new one so import the new one and delete the old one. Now is time to start our marble shader. Select a slot in the Material Editor (m) and then select VRay Fast SSS2 – it's an amazing shader for making translucent materials like skin or marble etc.



Use a preset to start with. In the preset options select Marble (white). Then change some of the parameters to improve the look (Fig.29).

Scale – additionally scales the subsurface scattering radius.

Overall color – controls the overall coloration for the material. This color serves as a filter for both the diffuse and the sub-surface component.

Diffuse color – the color of the diffuse portion of the material.

Diffuse amount – the amount for the diffuse component of the material. Note that this value in fact blends between the diffuse and sub-surface layers.

Scatter radius – controls the amount of light scattering in the material.

As you can see in the Specular amount I put 0, because I don't like to use the Specular for this shader. In my opinion there are too few options to control it so I'll blend it with a simple V-Ray

material that has great Specular control. First create a simple V-Ray material and adjust the Specular color to a RGB with the value 30/30/30 to create a highlight with a little glossiness (Fig.30).

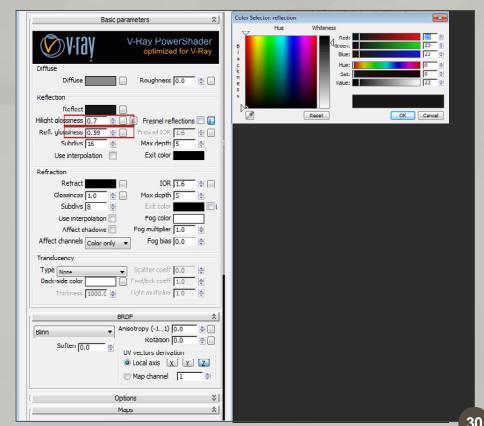
To make some tests with the new Specular, apply this material in the Override Mtl and click Render (Fig.31). When you look at the Specular it looks too regular and not realistic (Fig.32). To improve the Specular a little go to your Color map and open it in Photoshop. Remove the colors and apply some level adjustments until you create a map with the correct glossiness (Fig.33 – 34).

This creates an irregular Specular surface. In some places there will be more glossiness than others (Fig.35).

Now we have created a good looking Specular map we need to create a Blend material to mix both materials. Go to the Material Editor and select the VRay Fast SSS2 material and choose a V-Ray blend material. Click OK when it says “Keep old material as sub-material”. Now click and drag the Specular material to the first slot in the material, and set the blend mode to 60% (Fig.36). After you finish the material duplicate it twice and apply it to the base of the statue and to the apple, and change the maps for their relative maps.

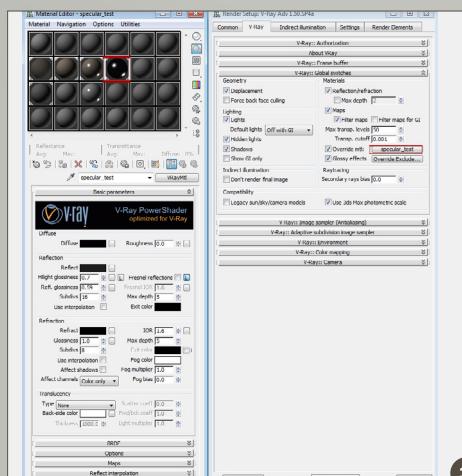
RENDER SETUP

Now we have our material finished. The only change to make is some render parameters to give us a good quality render (Fig.37). Now we can have a coffee and relax a little until the render finishes!

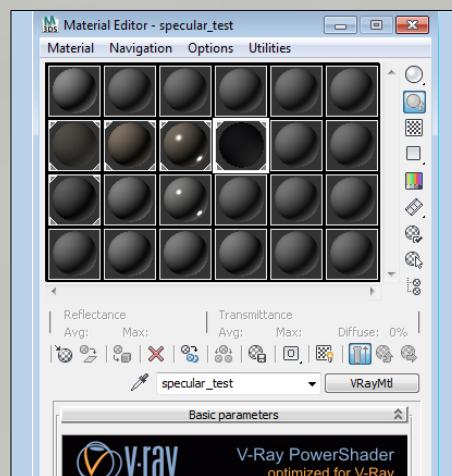


Once this is finished you can do some color correction in Photoshop. And here is the final image (Fig.38).

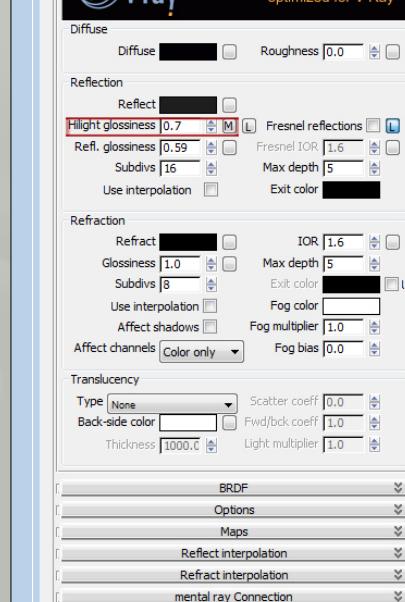
I hope you enjoyed this chapter; next month I'll be back with a Roman style sculpture, talking about the differences and the process of making a Roman bust.



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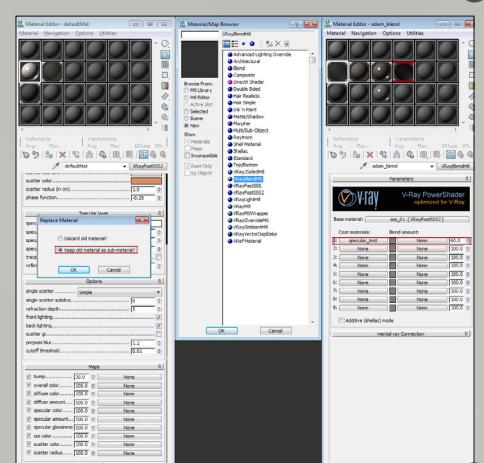
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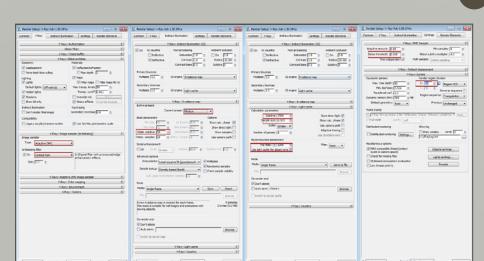
35



35



36



37

RAFAEL GHENCEV

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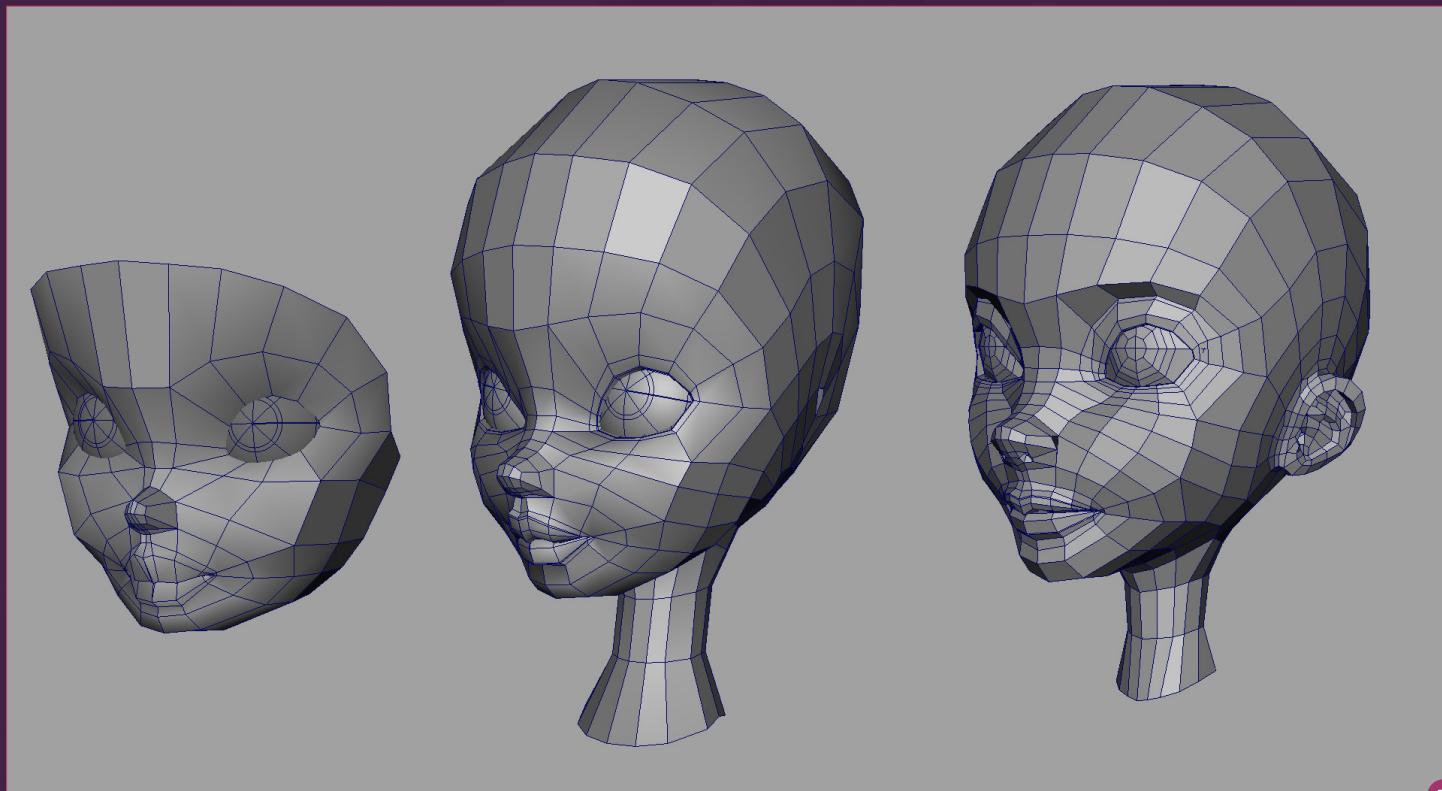
modo® 501 image by Robert Lechl

A 3D rendered character with long, dark, wavy hair and a white top with a purple dragon tattoo.

Black Wires

"AS FOR POSING THE CHARACTER, THE GREAT THING ABOUT THE ELEGANCE AND AESTHETIC OF THE FEMALE FORM IS THAT IT HAS AN ENORMOUS RANGE OF EXPRESSIONS AND YOU CAN GET TONS OF DIFFERENT POSES AND KEEP A NICE LOOKING SILHOUETTE"

Carlos Ortega is a genius when it comes to creating 3D cartoon characters. In this Making Of he talks us through the design and creation of his amazing image *Black Wires*. Carlos is nothing short of thorough with the information he gives us, and covers just about everything. You will like this one!

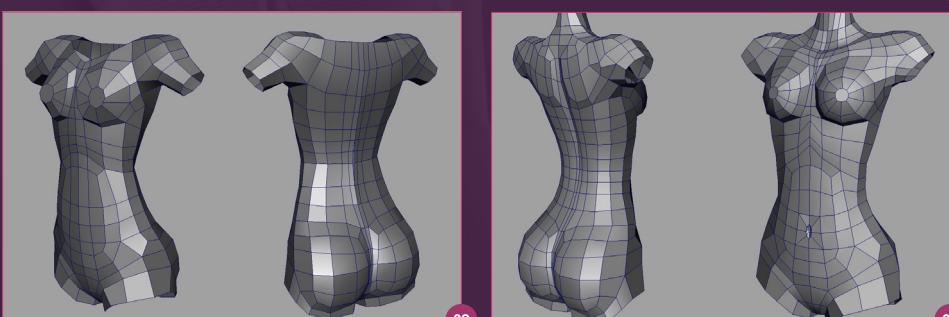


BLACK WIRES

Software used: Maya

CONCEPT

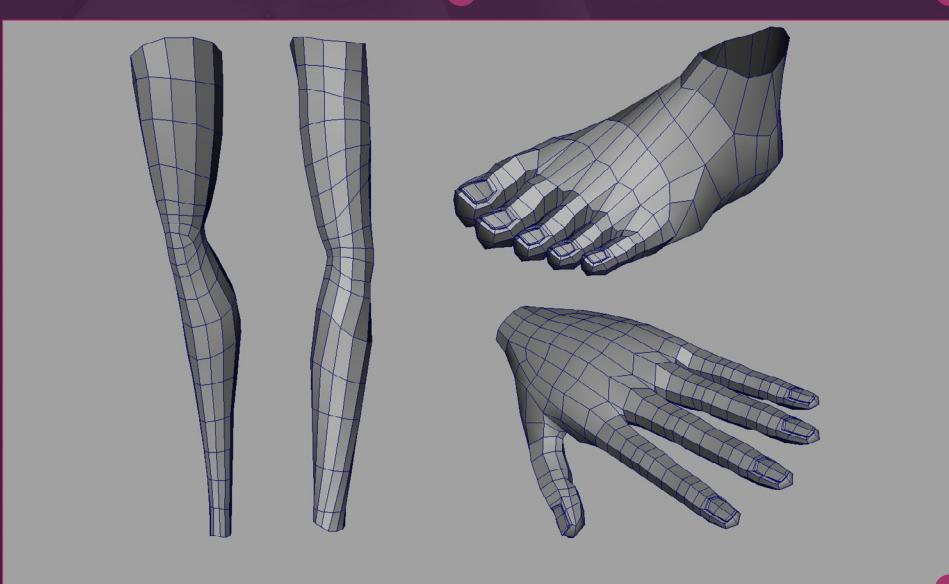
This image started as part of a freelance job that required still images of some girls and guys in different outfits for different environments.



Once the job was completed, and since I wasn't satisfied with the light, materials and textures in the project due the tight schedule I had, I decided to rework all of it and in some cases re-do some clothing from scratch. I love pin-up art and cartoons, so it was a good opportunity to create a new series.

MODELING

Instead of wasting time cleaning old models I modeled a whole new character from scratch, keeping the cartoony proportions such as the big head, thin and long legs and big eyes. The main point was to get a cute cartoony yet sexy girl. Regarding heads/faces I usually start from a plane and keep extruding edges to get the main poly flow structure and a decent dense mesh suitable for different facial expressions (Fig.01).



The torso, arms and legs were modeled from a cylinder, blocking the main volumes and then adding more geometry to work with to define

specific areas such as the shoulders, neck, elbows, knees etc (Fig.02 – 04).

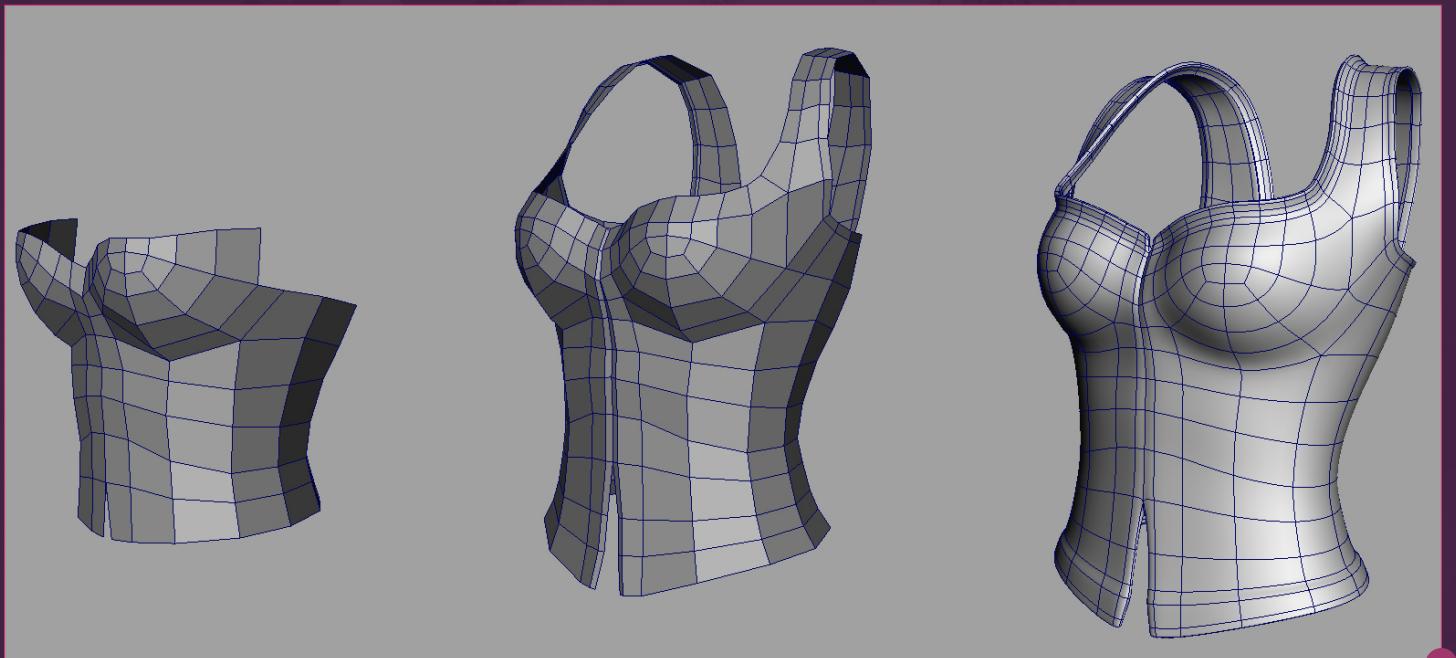


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The strands of hair were modeled entirely from a plane. Once I have the basic shape I use tools like the Insert Edge Loop and Transform to create and move the new geometry along its normal's and simulate rough hair fibers (Fig.05 – 07).

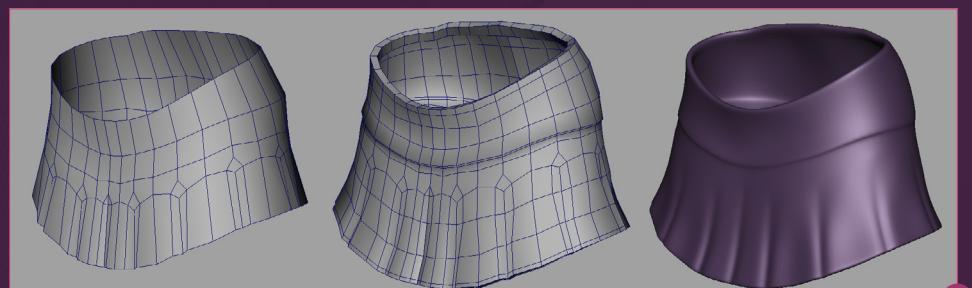
If I need adjustments I use the Smooth Selection from Maya, which is a great and fast way to tweak dense geometry. The cloth was modeled by extracting the geometry from the body mesh and then extruding the border edges covering the torso to finish the piece (Fig.08).

The skirt was much easier and the folds were created using Bevel and Extrude (Fig.09).

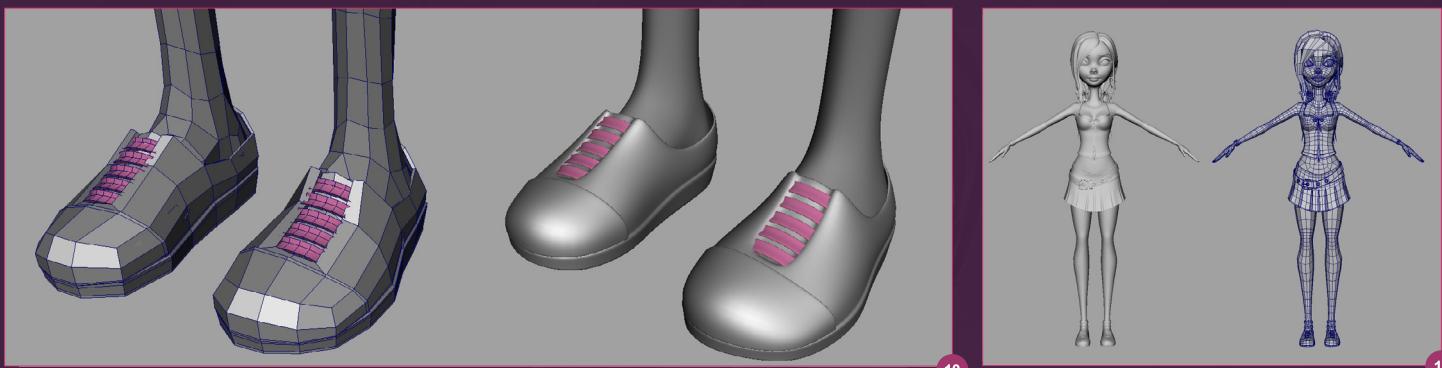
To complete the scene, I modeled some props to match the theme of the image. These were

some speakers, a set of headphones and some wires (Fig.10 – 12).

TEXTURING & SHADING
All the textures were created inside Photoshop.



09

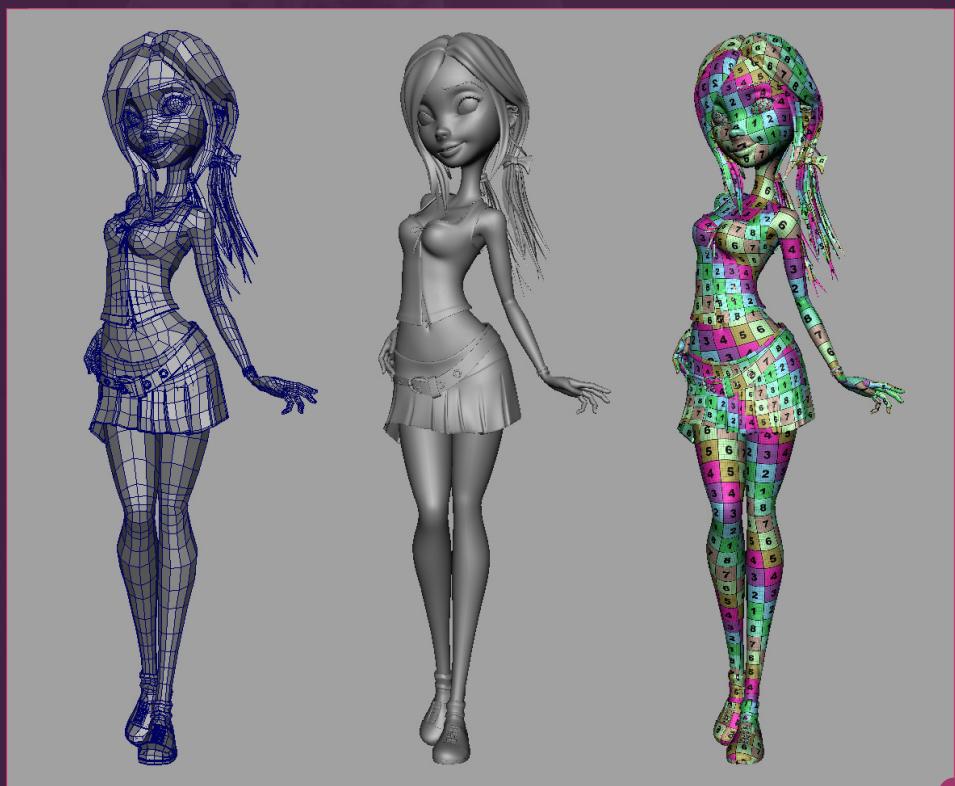


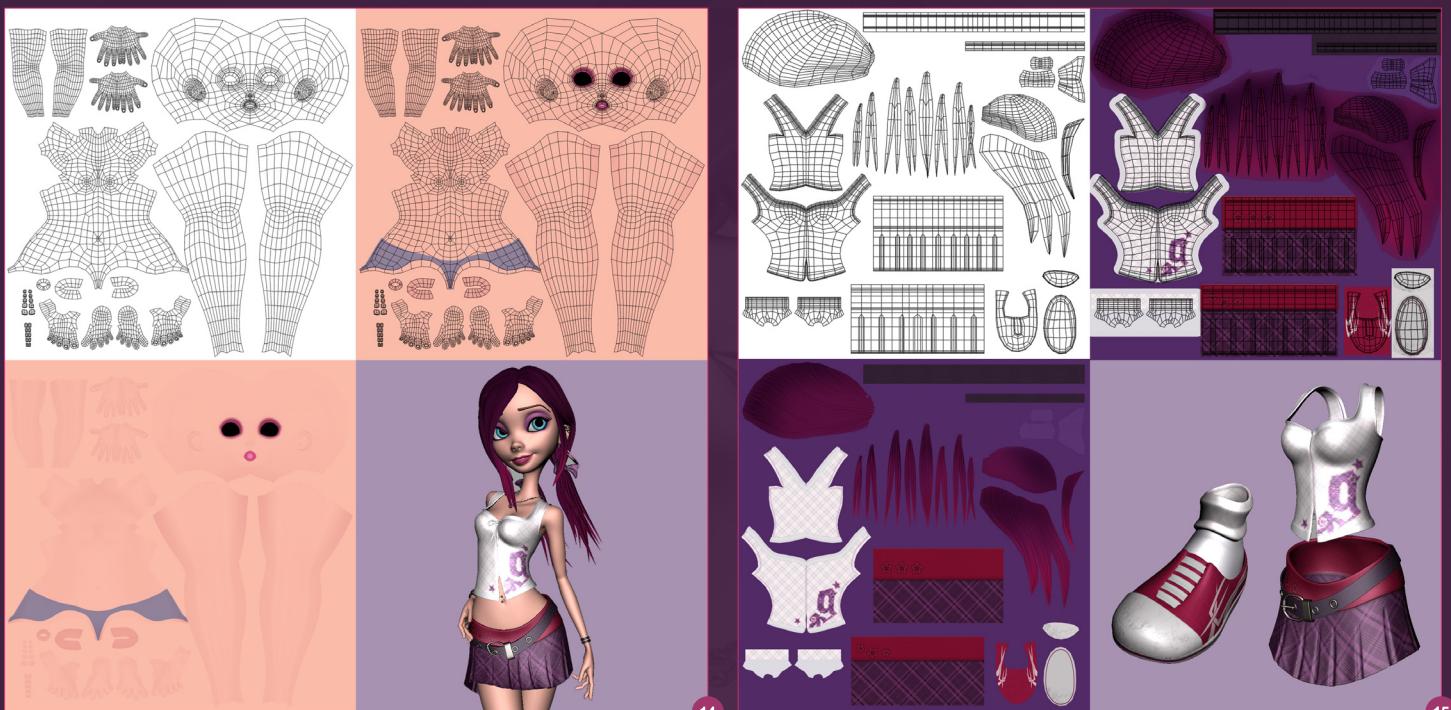
The texture for the girl was pretty simple; after all, I wasn't looking for realistic skin. I painted warm tones using the help of a previously baked Occlusion map.

I used the Miss Fast Skin material with some hand-painted maps to control the scattering layers. The final material doesn't have any special settings; it was only a matter of tweaking the values until I had the desired look (Fig.13 – 14).

The clothing was created using some fabric textures as a base and then desired colors and details such as stitches, stamps and patterns were hand-painted after (Fig.15).

The hair uses a few hand-painted strokes to create more variation in the coloring, and uses an anisotropic Maya material.





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RIGGING & POSING

I used a basic skeleton on the model to create different poses. Since it was just for a still image there was no need for complex controls and a few basic blend shapes did the trick (Fig.16).

The default binding gave me good enough results on the deforming mesh. I did some minor adjustments on the elbows and knees.

As for posing the character, the great thing about the elegance and aesthetic of the female form is that it has an enormous range of expressions and you can get tons of different poses and keep a nice looking silhouette (Fig.17).

I didn't want anything too extreme though, so for the final image I went for a simpler pose that showed the character's attitude: cute, rebellious and playful (Fig.18).

LIGHTING & RENDERING

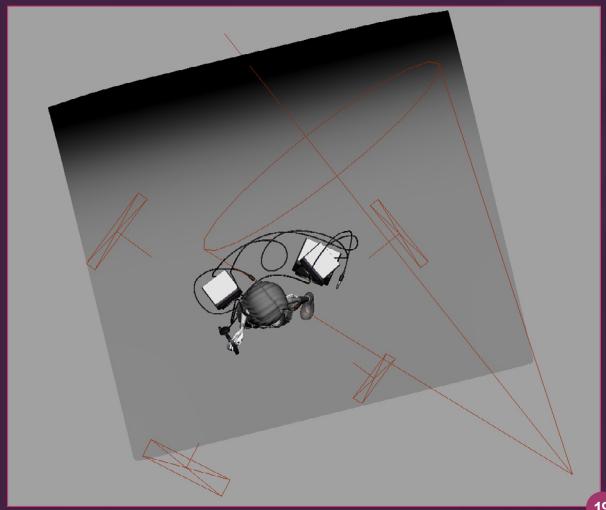
I wanted to recreate a real fashion photo shoot light setup, so after some quick research on the internet, I analyzed some great pictures and found a nice setup that enhanced the subject's silhouette. I arranged four Area Lights around the model (Fig.19 – 20), one main light (Fig.21), a fill light (Fig.22) and two more pointing towards the back of the model (Fig.23) creating a nice rim light. I used a Spot light pointing to the background (Fig.24), which consisted of a



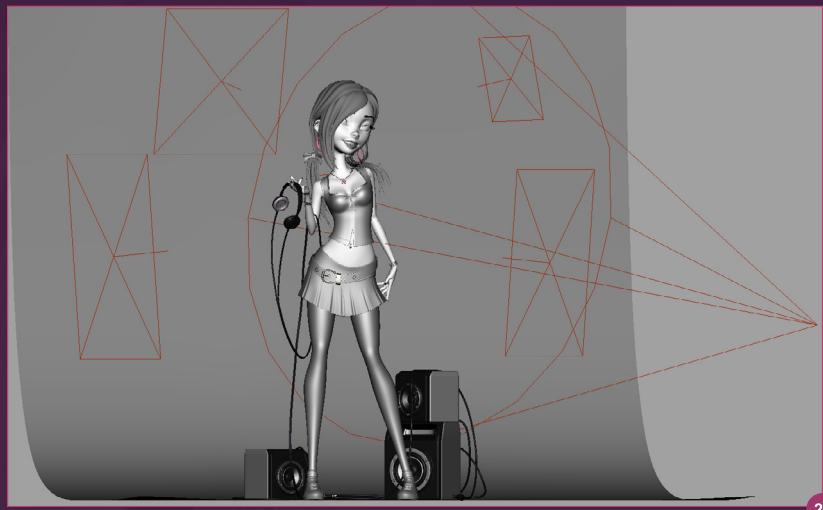
18

blended plane to avoid any noticeable horizon in the scene. I had to add some light to integrate everything and prevent some of the props getting more attention than the model itself (Fig.25).

I rendered the scene in mental ray using the mia_exposure_simple node with Final Gather on. The final output was 3200 x 5200px.



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POST

I tried to get almost everything right in one single render – no compositing or Render Layers – so the only post-production I did for this image was to add some of the graphics in the background and a small curves adjustment in Photoshop (Fig.26 – 27).

CONCLUSION

I enjoyed working with this character a lot, and I even used three base meshes for nine different characters, all with small changes in poses and clothing creating new solid pieces.

I was pretty satisfied with the result. Thanks for reading and thanks to 3DTotal for the huge support they give to artists!



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CARLOS ORTEGA

For more from this artist contact them at:

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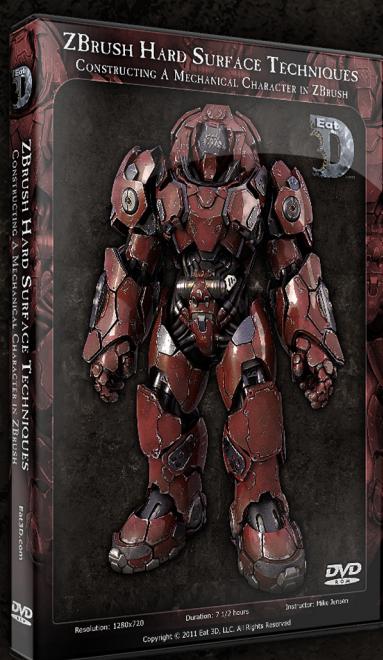
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:VOLUME 5

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This month we feature:

"NEBT - HET"

BY VITALY BULGAROV

The following shots of the "Nebt - Het" book pages are featured here in full-resolution and can be read by zooming in...



NEBT-HET

BY VITALY BULGAROV

JOB TITLE: Cinematic Artist – Blizzard Entertainment

SOFTWARE USED: Softimage XSI, ZBrush, Photoshop

INTRODUCTION

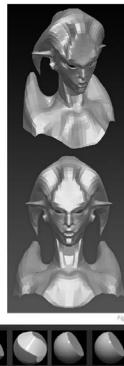
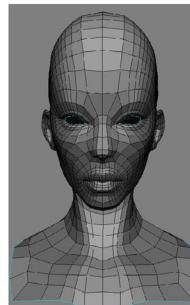
Nebt-het is also known as Nephthys in Egyptian mythology. She is the daughter of Geb and Nut, the sister of Asar and Aset, wife and sister of Set, and the mother of Anpu by Osiris.

Nebt-het is often featured as a ferocious and dangerous divinity, capable of incinerating the enemies of the Pharaoh with her fiery breath. Being inspired by such a character and the story behind her I was also thinking about mixing different ideas from different cultures and styles.

MY PRINCIPAL GOAL
WAS TO MAKE A
SCI-FI PIECE, BUT WITH
AN ALTERNATIVE, ANCIENT
FEELING AND A SENSE OF
HISTORY

I love how the name sounds and so I took it as a symbol and starting point. My principal goal was to make a Sci-Fi piece, but with an alternative, ancient feeling and a sense of history. Mysterious cultures and ancient Egyptian sarcophagi with all their ornamental decoration tell you stories just by looking at them.

All I knew from the beginning was that it had to be a female, contain a steel mask and have a strong dark feeling. It had to convey both fantasy and Sci-Fi elements and of course one of my goals was to have fun and explore ideas, which was a priority!



MODELING AND SCULPTING THE BASE

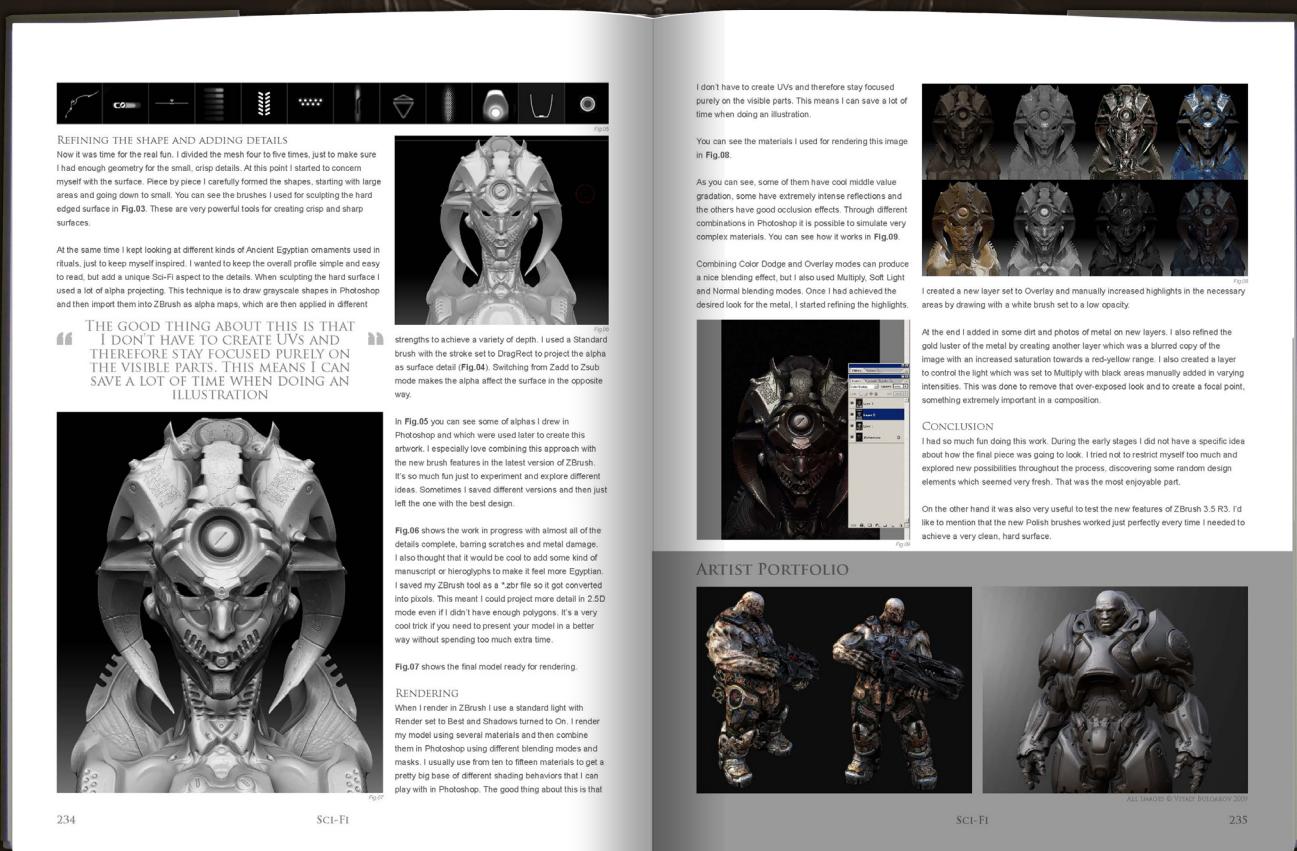
I started by modeling a generic female head in Softimage XSI. I didn't draw any preliminary sketches because I wanted to jump into the design right away during the sculpting stage. The base mesh of the head was built using a poly by poly modeling technique. This means that the mesh is built by basically extruding edges from existing polygons, after which the new points are moved to form the required shape and so on. I kept the overall shape and surface pretty smooth so I could push things drastically in ZBrush later.

The base mesh I built had more than enough detail to get me started (Fig.01).

I then imported the base mesh into ZBrush and used the Move brush to change the proportions and develop some crazy shapes. At this point I didn't care too much about stretched geometry. Once I got some interesting shapes I imported the mesh back into XSI and added more Edge Loops in areas that had become too stretched. The basic premise behind a clean sculpt is to keep your polygons in as many quads as possible. Fig.02 shows my earliest low poly concept model, which gives you an idea about the overall shapes that were sculpted using the Move, Standard and Inflate brushes.

SCI-FI

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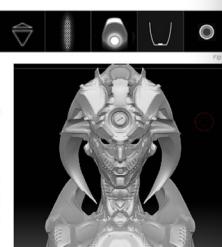


REFINING THE SHAPE AND ADDING DETAILS

Now it was time for the real fun. I divided the mesh four to five times, just to make sure I had enough geometry for the small, crisp details. At this point I started to concern myself with the surface. Piece by piece I carefully formed the shapes, starting with large areas and going down to small. You can see the brushes I used for sculpting the hard-edged surface in Fig.03. These are very powerful tools for creating crisp and sharp surfaces.

At the same time I kept looking at different kinds of Ancient Egyptian ornaments used in rituals. Just to keep myself inspired. I wanted to keep the overall profile simple and easy to read, but add a unique Sci-Fi aspect to the details. When sculpting the hard surface I used a lot of alpha projection. This technique is to draw grayscale shapes in Photoshop and then import them into ZBrush as alpha maps, which are then applied in different

THE GOOD THING ABOUT THIS IS THAT
I DON'T HAVE TO CREATE UV'S AND
THEREFORE I STAY FOCUSED PURELY ON
THE VISIBLE PARTS. THIS MEANS I CAN
SAVE A LOT OF TIME WHEN DOING AN
ILLUSTRATION



strengths to achieve a variety of depth. I used a Standard brush with the stroke set to DragRect to project the alpha as surface detail (Fig.04). Switching from Zadd to Zsub mode makes the alpha affect the surface in the opposite way.

In Fig.05 you can see some of alphas I drew in Photoshop and which were used later to create this artwork. I especially love combining this approach with the new brush features in the latest version of ZBrush. It's so much fun just to experiment and explore different ideas. Sometimes I save different versions and then just left the one with the best design.

Fig.06 shows the work in progress with almost all of the details complete, banning scratches and metal damage. I also thought that it would be cool to add some kind of manuscript or hieroglyphs to make it feel more Egyptian. I saved my ZBrush tool as a ".zbr" file so I got converted into pixels. This meant I could project more detail in 2.5D mode even if I didn't have enough polygons. It's a very cool trick if you need to present your model in a better way without spending too much extra time.

Fig.07 shows the final model ready for rendering.

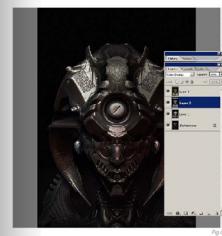
RENDERING
When I render in ZBrush I use a standard light with Render set to Best and Shadows turned to On. I render my model using several materials and then combine them in Photoshop using different blending modes and masks. I usually use ten to fifteen materials to get a pretty big base of different shading behaviors that I can play with in Photoshop. The good thing about this is that

I don't have to create UVs and therefore stay focused purely on the visible parts. This means I can save a lot of time when doing an illustration.

You can see the materials I used for rendering this image in Fig.08.

As you can see, some of them have cool middle value gradation, some have extremely intense reflections and the others have good occlusion effects. Through different combinations in Photoshop it is possible to simulate very complex materials. You can see how it works in Fig.09.

Combining Color Dodge and Overlay modes can produce a nice blending effect, but I also used Multiply, Soft Light and Normal blending modes. Once I had achieved the desired look for the metal, I started refining the highlights.



I then added some dirt and photos of metal on new layers. I also refined the gold luster of the metal by creating another layer which was a blurred copy of the image with an increased saturation towards a red-yellow range. I also created a layer to control the light which was set to Multiply with black areas manually added in varying intensities. This was done to remove that over-exposed look and to create a focal point, something extremely important in a composition.

CONCLUSION
I had so much fun doing this work. During the early stages I did not have a specific idea about how the final piece was going to look. I tried not to restrict myself too much and explored new possibilities throughout the process, discovering some random design elements which seemed very fresh. That was the most enjoyable part.

On the other hand it was also very useful to test the new features of ZBrush 3.5 R3. I'd like to mention that the new Polish brushes worked just perfectly every time I needed to achieve a very clean, hard surface.

ARTIST PORTFOLIO



ALL IMAGES © VITALY BULGAROV 2009

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3DC next month

Here is what's in next months issue of 3dcreative

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by Jose Lazaro , Gavin Goulden, Lino Masciulli & Anto Juricic

Low Poly Characters

Chapter 2 - Mapping

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The Italian Courtyard

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MODELING FEATURES OF THE HUMAN ANATOMY



Modeling the features of characters is something that has caused problems for many artists over the years. A good model can easily be spoiled by an incorrectly modeled feature, such as a hand or an ear. This eBook offers a step-by-step guide to help you make sure you never struggle with feature modeling again, presenting detailed chapters that have been written specifically for 3ds Max, Maya, Cinema 4D and modo.

CHAPTER 1 | APRIL ISSUE 068
Ears

CHAPTER 2 | THIS ISSUE
Eyes

CHAPTER 3 | NEXT ISSUE
Hair

CHAPTER 4 | JULY ISSUE 071
Hands

CHAPTER 5 | AUGUST ISSUE 072
Feet

CHAPTER 6 | SEPTEMBER ISSUE 073
Skin

MODELING FEATURES OF THE HUMAN ANATOMY: CHAPTER 2 - EYES

Software used: 3ds Max

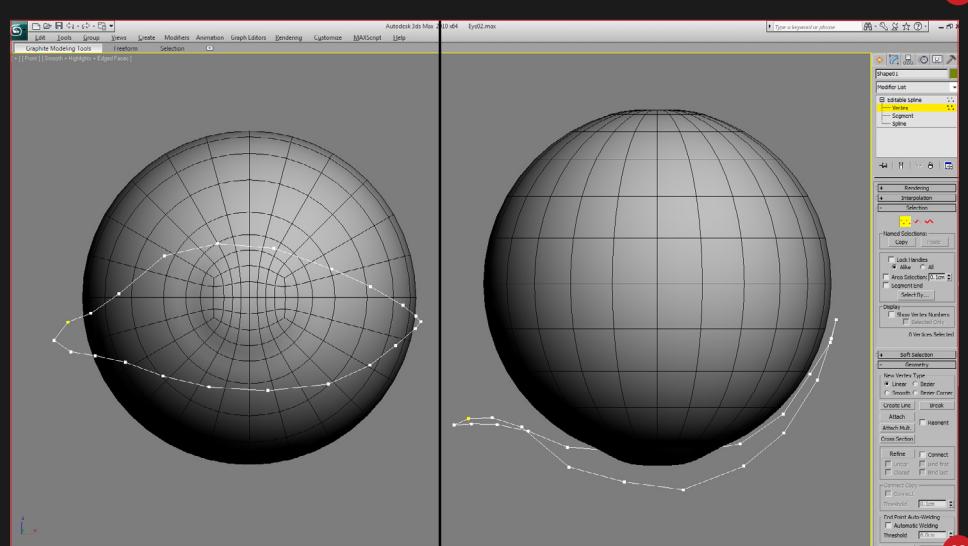
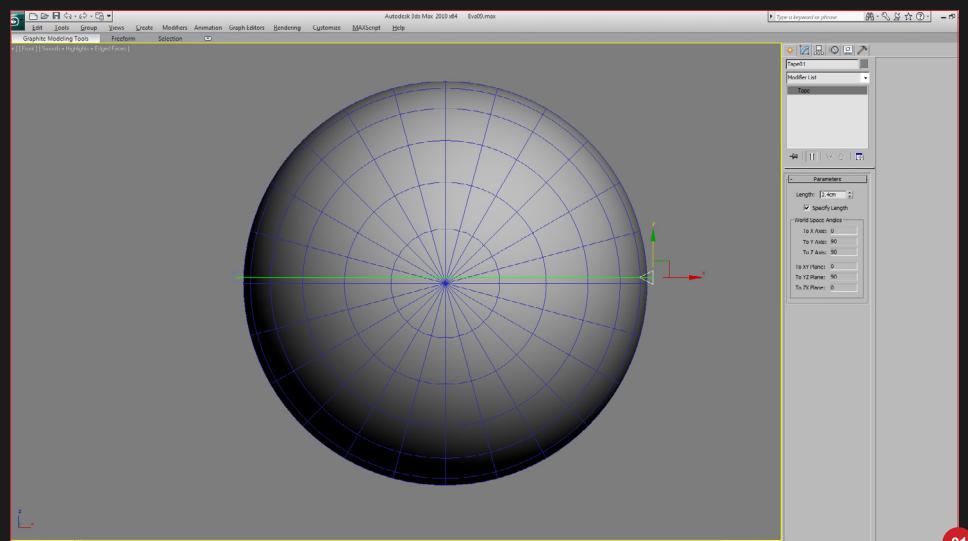
INTRODUCTION

The eye is a key part in facial anatomy as it is an area that vastly influences the facial expression of any character. Therefore we must remember that eyes can be animated, can come alive and then we'll model with the best flow loops and the correct number of polygons. You should avoid annoying three-pole or five-poles of possible, although they are inevitable.

The first thing we must keep in mind when we model an eye is its common parts: the eyeball, which we all know about, the eyelid (the skin covering the eyeball) and finally the eyelashes, which protect us from dirt.

First, start with a basic round eyeball (Fig.01). You can create a sphere of approximately 24 mm and 24 segments. This helps us to immediately start with the perfect round shape.

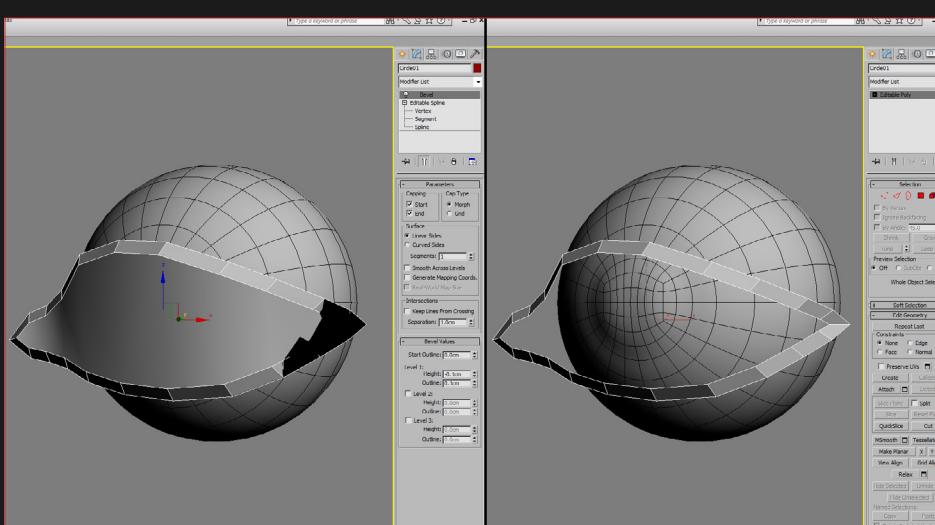
I created the small bulge of the cornea as you can see in Fig.02, but you can do that later if you like. Draw a Spline for the interior shape of the eyelids. To do this you should use a good reference. Note that each vertex of the upper eyelid has a vertex "brother" in the lower eyelid. Working cleanly from the beginning will help us



maintain order and avoid wasting time. It will also help the rigger when he is skinning.

It is important to also use a variety of different views of eyes as references. Some of the views

are highly complex and therefore require close attention. The best thing you can do is always have a mirror nearby to look at your own eyes in different views to gain a clearer understanding of what the eye's shape is like.



Add a Bevel modifier and move the slider of the parameter of level 01. I did this to give the lid a concave shape quickly with greater accuracy (Fig.03). Then convert to Edit Poly and remove the dirty caps on the border that the Bevel modifier created.

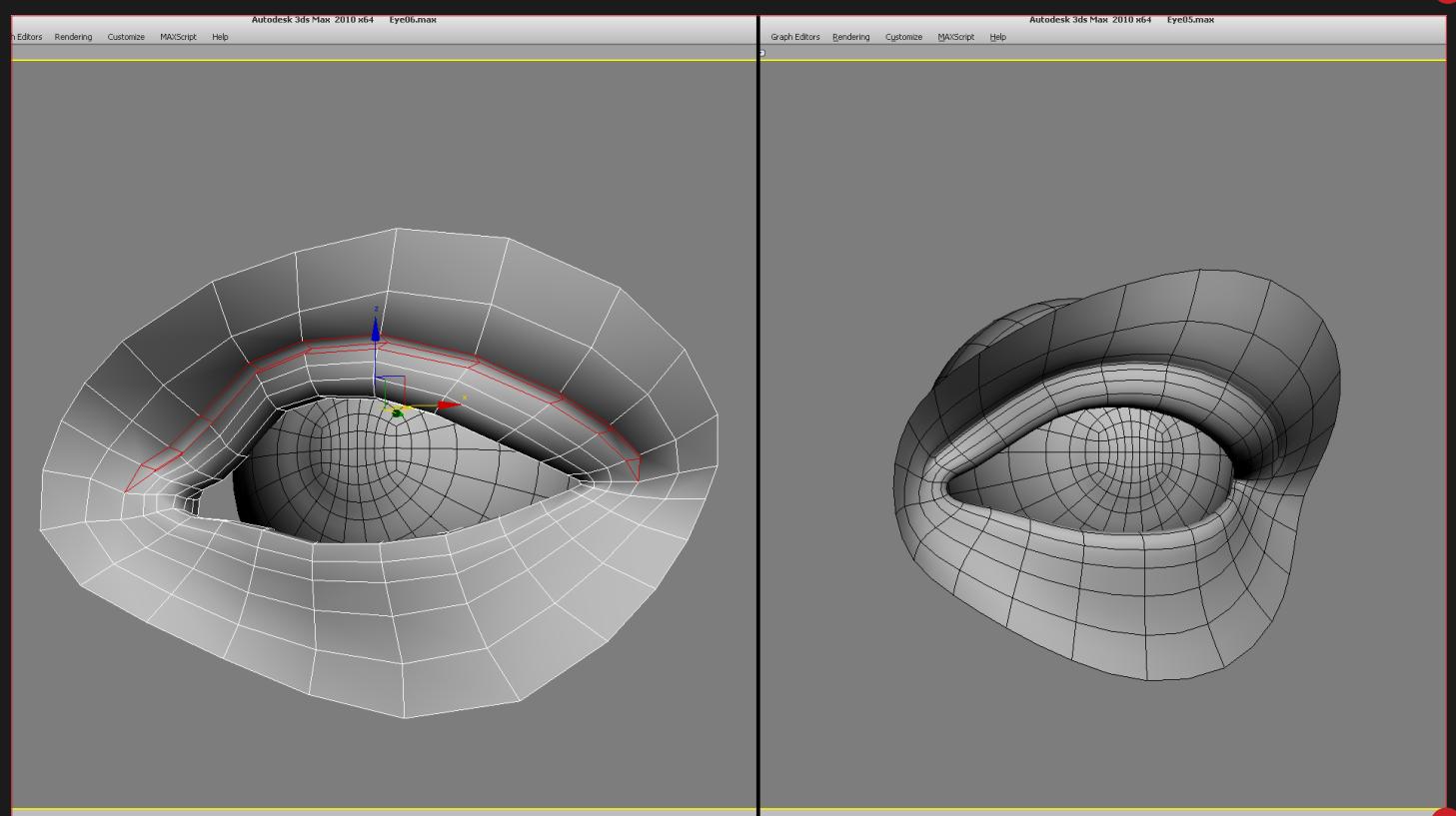
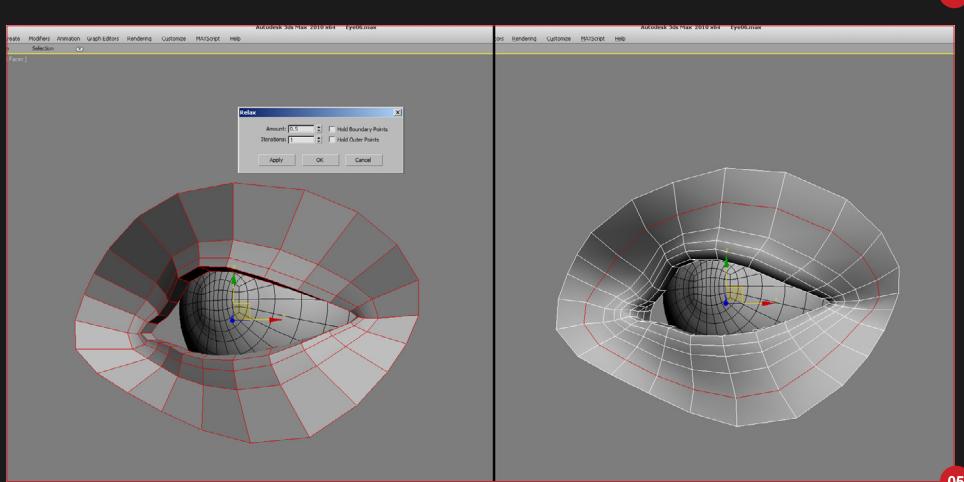
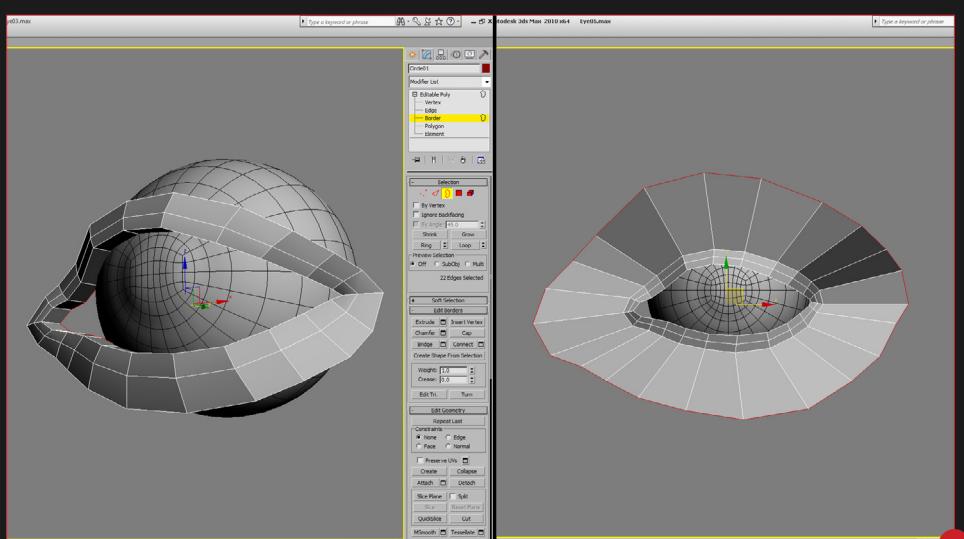
Now it is a case of doing simple, classic edit polygon modeling. Continue to try to adjust your eye mesh to match the references and your own eye in the mirror. In my case I had to move up the outer loop to fit the eye and the reference.

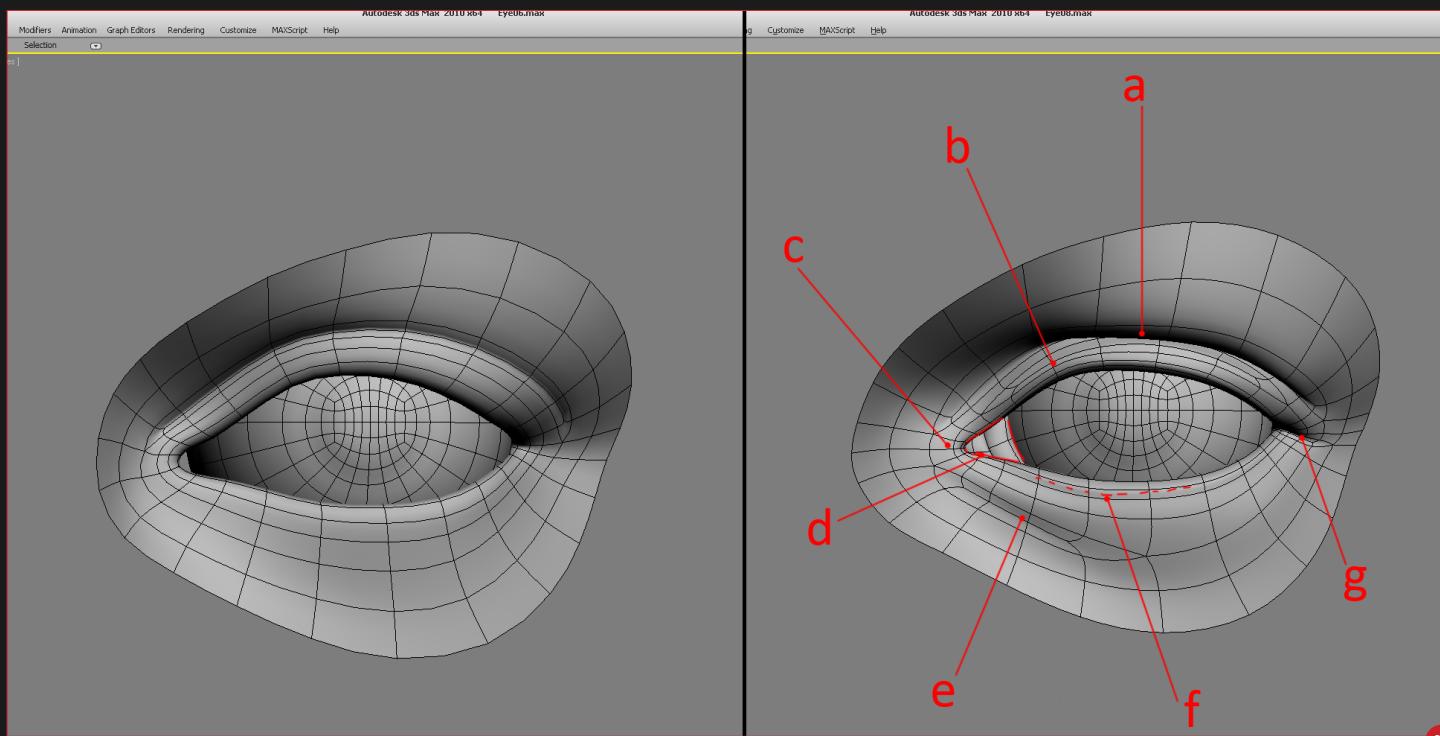
I also extruded the internal border to create internal polygons. I can't stress enough how important it is at this point to look closely at your references again (Fig.04).

In reality eyes have a radial, flat muscle and Orbicularis Oculi with a clear circular flow that is clear to see. Although in computer graphics we have more freedom to break any rules of anatomy, we will follow this outline of muscle because it is the most basic way of modeling the eye for animation.

I added a general Relax for the whole mesh to smooth the contours and make it look fleshy. I almost always use the Relax tool for this purpose, smoothing and relaxing the tension between vertices. We have already created the basic shape, now all that is left to do is add the detail. Add some radial loops around the eye to improve the overall shape (Fig.05). Follow the references to be accurate.

Create the crease that is formed when the lid is open (Fig.06). Select and strategically loop and chamfer edges. Collapse the triangles into





a single vertex and then create another central loop that you should move inward to increase the fold.

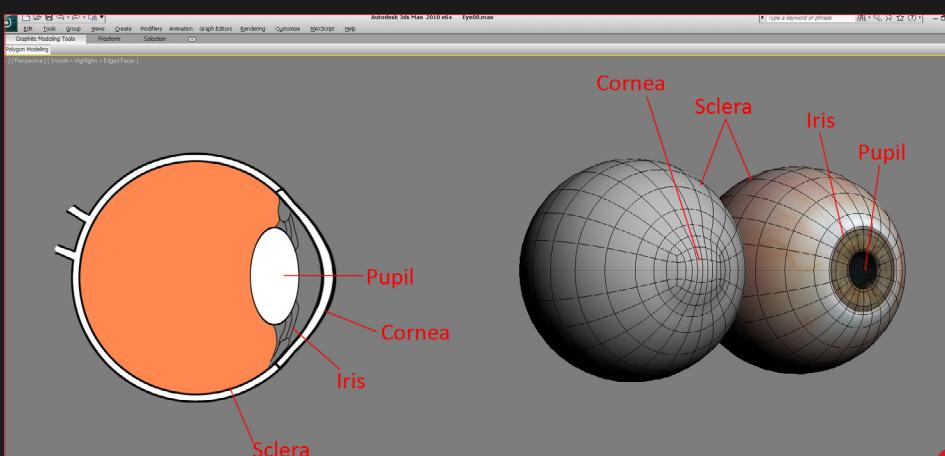
Now we are at the point where we have the eye looking quite good, but it still looks quite unnatural and basic, so we need to continue adding the extra detail to break up the shape's monotony.

We know how to create folds and cut and move big parts of vertices, edges or polygons with Soft Selection. Now I will talk about the areas where you can add detail to the eye, but not so much about the tools to use. You will probably know about that already (Fig.07).

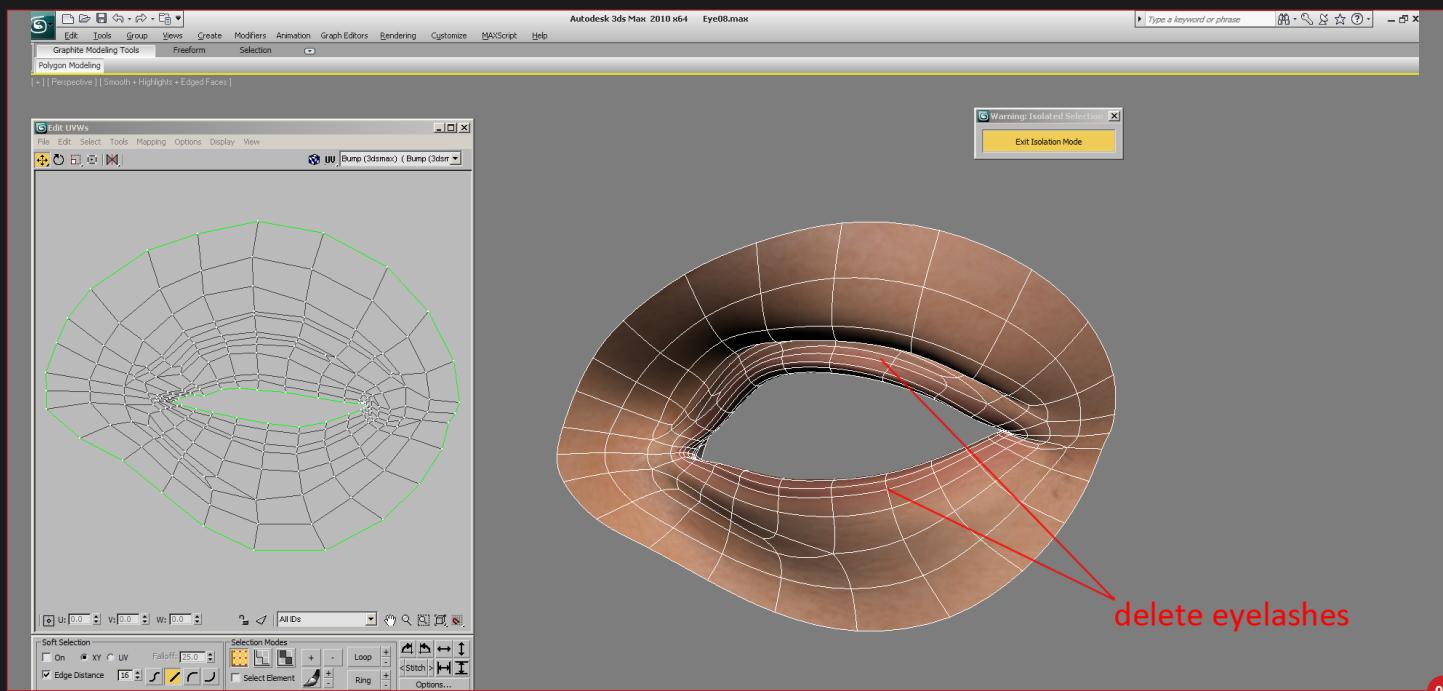
- a. When the upper lid is opened in a relaxed position it creates a compression of a few millimetres between the eyelid and the skin overlying the area of the frontal bone.
- b. Creating a fold on the upper eyelid gives a more organic appearance and also helps us to have more loops for animation.
- c. Improve the shape of the inner corner. It is easy to use basic sculpting tools to increase and exaggerate these fleshy areas.
- d. I added a lachrymal – it is a basic figure, two boxes smoothed and deformed. If you

need more detail in this area, remember that the movement of the eyeball moves and stretches the lachrymal, so it should be modeled in detail for that purpose.

- e. The bags under the eyes are usually caused by fatigue or illness. We should exaggerate this to make it noticeable, but without actually disturbing it. This may force us to break the concentric loops, but it shouldn't be a problem because it is an area with less flexibility.
- f. Add an extra bevel on the inner edge of the eye. This will give a more sculpted and defined touch.
- g. Adding some folds in the outer corner will give the impression that the skin is impressed.



Look at a scientific illustration of an eyeball section (Fig.08). The eyeball is actually very difficult to do in CG. As artists we are not going to be accurate at a scientific level, but you must know the actual shape of the eyeball to model it. Its size is 24mm or 25mm, and the cornea area breaks the sphere shape.



These are the four primary areas that we should incorporate into our eye. The concave bulge is the cornea. Add a highly reflective and transparent material to achieve that. The sclera, iris and pupil are mostly a fast skin shading MR material with a planar texture and overall diffuse coloration.

Since our eyes are only a small area it isn't a problem to prepare UVs. Apply Planar mapping and move out any vertex to avoid overlapping. For the texturing I used a photo reference.

I have taken special care to remove the eyelashes from the picture because we'll add them in the next step (**Fig.09**).

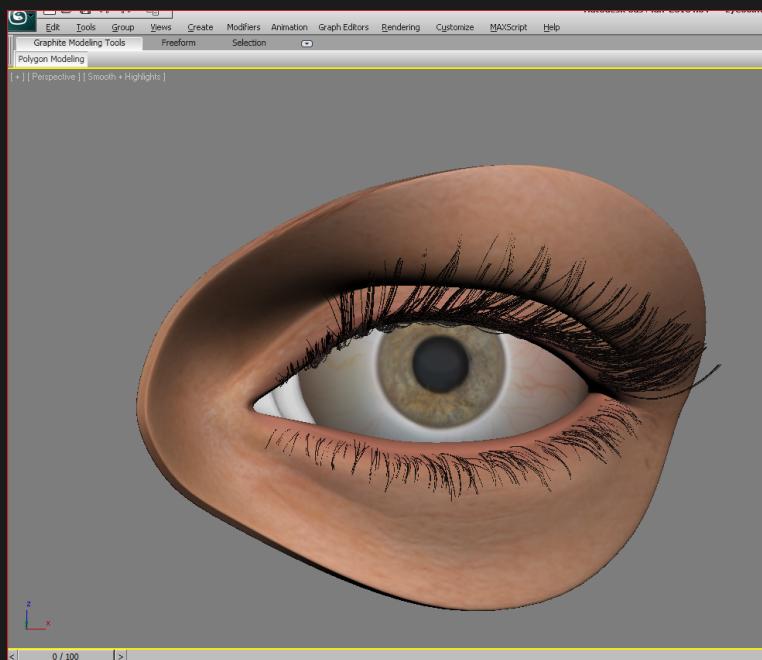
Finally the last step is to add the eyelashes using the dynamic hair system in 3ds Max: Hair and Fur (**Fig.10**). Once they are created I extracted them and made them into polygons. The eye skin material isn't really fancy it's just a basic fast skin with Reflection. I used the fastskinplus MR material, which is a combination of fast skin shader with an Arch

& Design material. You can find it here: <http://mentralraytips.blogspot.com/2008/04/beauty-isnt-only-skin-deep-combining.html>

And that's all! I hope you enjoy it!

JOSE LAZARO

For more from this artist visit:
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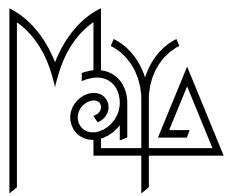
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MODELING FEATURES OF THE HUMAN ANATOMY



Modeling the features of characters is something that has caused problems for many artists over the years. A good model can easily be spoiled by an incorrectly modeled feature, such as a hand or an ear. This eBook offers a step-by-step guide to help you make sure you never struggle with feature modeling again, presenting detailed chapters that have been written specifically for 3ds Max, Maya, Cinema 4D and modo.

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MODELING FEATURES OF THE HUMAN ANATOMY: CHAPTER 2 - EYES

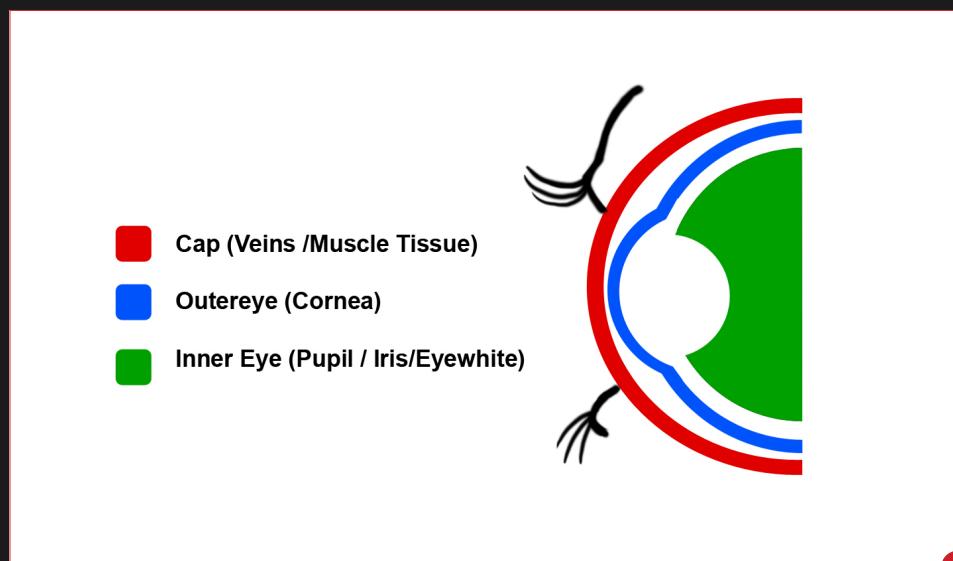
Software used: Maya

Arguably, the eye is the most important part in selling a character. "The window to the soul" can add so much personality to your character and, in terms of video game graphics, can take more than just a textured sphere to be believable. In this tutorial, I will outline how I make eyeballs for the hero and main characters in games, and show that the human eye isn't as easy as a primitive sphere.

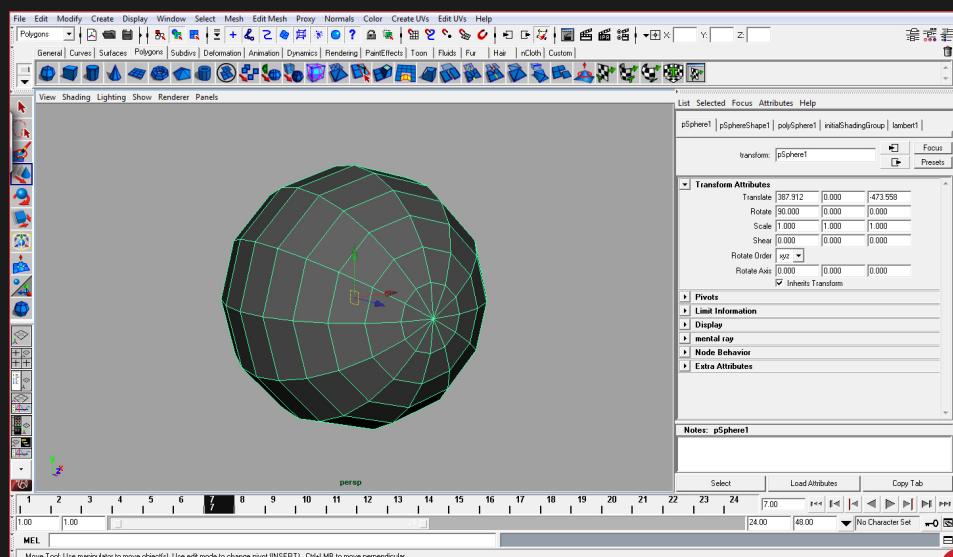
The first step we'll take, like any other part of human anatomy, is to research how the part is actually constructed (Fig.01). There is no need to go deep into medical research; rather just find out how the visible part is constructed. In this case, we will be focusing on three major anatomical parts (cornea, pupil and iris) and selling the look with three different sections of a model.

Create a sphere with a decent number of subdivisions (Fig.02). There is no hard rule in terms of what the number will be. I used 12 divisions, but the major goal is to not have an object so jagged that you can clearly see hard edges when looking at the eye.

Next, grab the center of the eye and begin to move the first few inner rows back to create a concave shape (Fig.03). The iris and pupil of the eye are actually set inwards rather than just



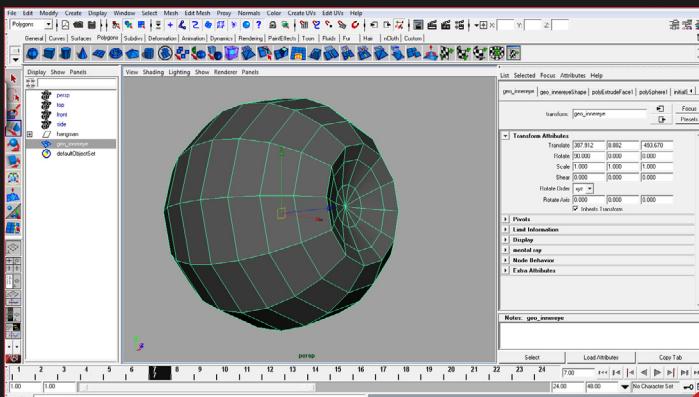
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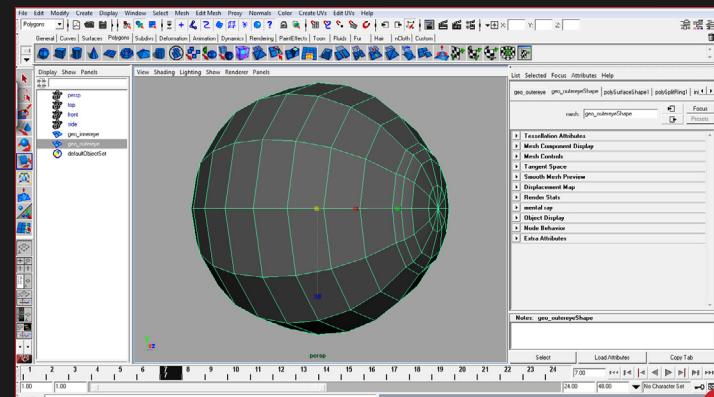
02

being flat and spherical. By replicating this in your model the eye will have depth and catch light just like its real world counterpart. To make life easier for yourself, rename this mesh in the outliner to something more appropriate such as "geo_innereye."

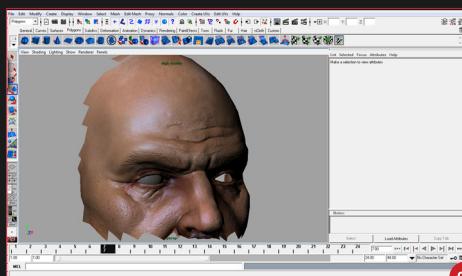
The next step will be to duplicate this model, scale it up slightly and basically reverse the shape of the inner eye. Take the center rings of the eye and move them outwards to create a bubble (Fig.04). This will be the piece of the eye that catches reflections and will act as our cornea. The more geometry you add and



03



04

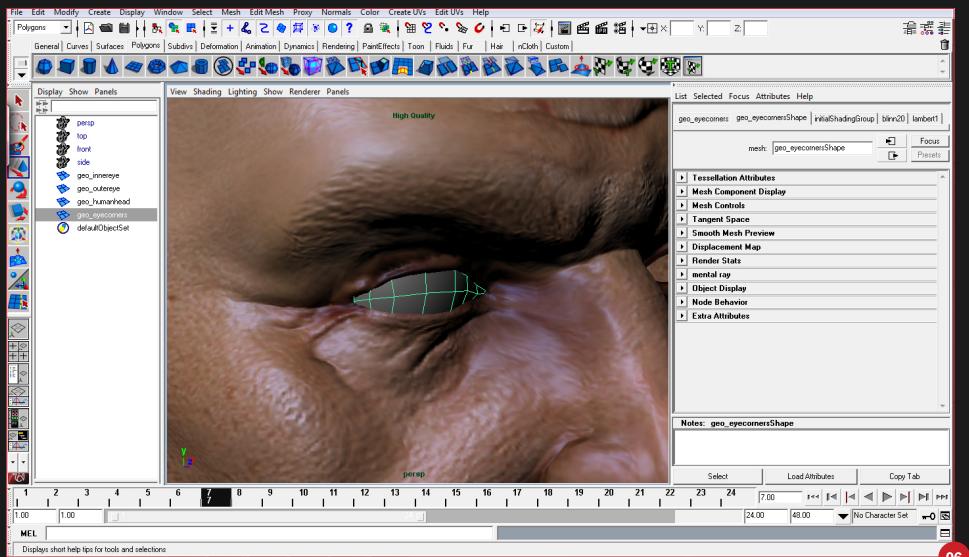


the more you refine the shape of the cornea, the more accurate the reflections will be and, therefore, the more "realistic". However, in a game environment your budgets may not allow you this luxury. If you do edit the geometry heavily, just be sure to keep the cornea area roughly in the same place as the pupil and iris.

Both shells should be nearly occupying the same space and stacked on top of each other. At this stage, it is also safe to remove the back rows of polygons from the eye as they will never be seen and can add more to your budget for no purpose.

After you have these two layers, the next step is to create a "cap" that will help blend the eyeballs into the head (**Fig.05**). By this stage you will most likely have a character's head eagerly awaiting eyes. I used a basic game model head that I had kicking around. I began by grabbing the polygons of my character's eyelid, duplicating them, and moving the bottom row of edges down to meet the lower lid.

Add geometry to conform this cap object to the eyeball, giving it a rounded shape. Intersect the edges and the corners with the eyelids. Unlike other parts of the eyeball, this section will never



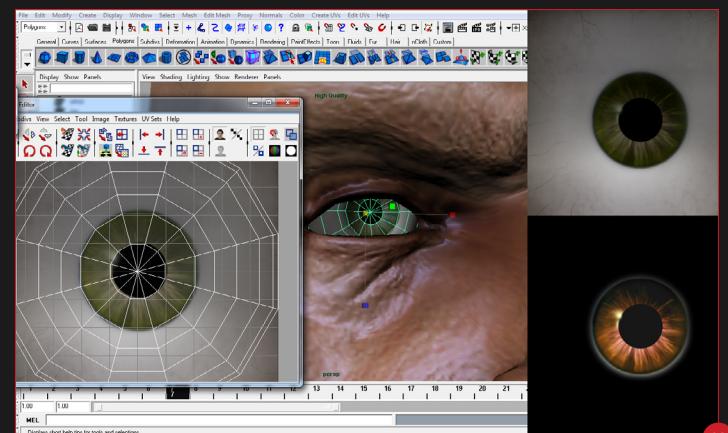
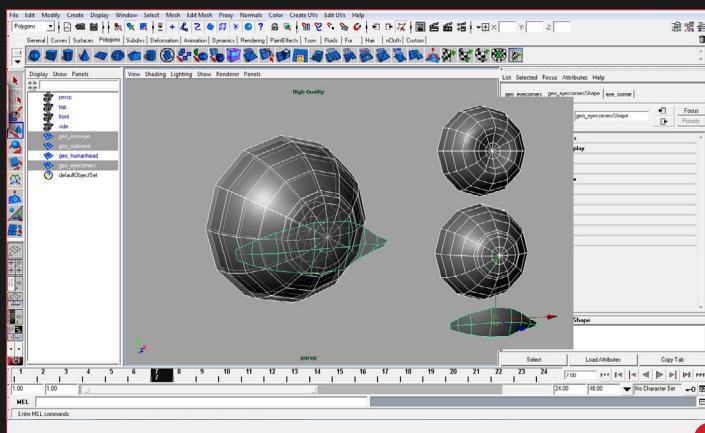
rotate and will most likely stay static or squish and squash with the eyelids when they animate (**Fig.06**).

It is important, due to the layered alphas that we are using, that all of the layers of our eye do not touch each other but still remain close to one another. You don't want the eyeballs to have too much depth, but due to technical reasons the planes cannot intersect (**Fig.07**). Since each layer has varying transparency and specular values, one layer poking through the other would be extremely noticeable. At this stage I create a simple Blinn material for each eye part, name the material accordingly and assign them to their respective models.

The next step is to dive into some texturing. First, we will focus on the inner eye by creating the eye whites, iris and pupil (**Fig.08**). For the iris texture, I would recommend not photo

sourcing your texture as many photos will have lighting information that you do not want in your final diffuse texture. I simply created an off-white background and add a slight discoloration around the edges with a Grime brush. The pupil is a black circle in the texture with the iris surrounding it. To create the iris, I selected a color and painted details with brighter and darker shades fanning out from the center to create the banding. We will be using a Specular map to create the specular color. So, when light shines on this section, a different color is blended with the base diffuse color. I think a hotter, contrasting color to the iris creates a nice effect. Simply take the iris layer of your texture, duplicate it, give it a black background (you do not want the eye whites to have this effect) and adjust the hue and saturation to your liking.

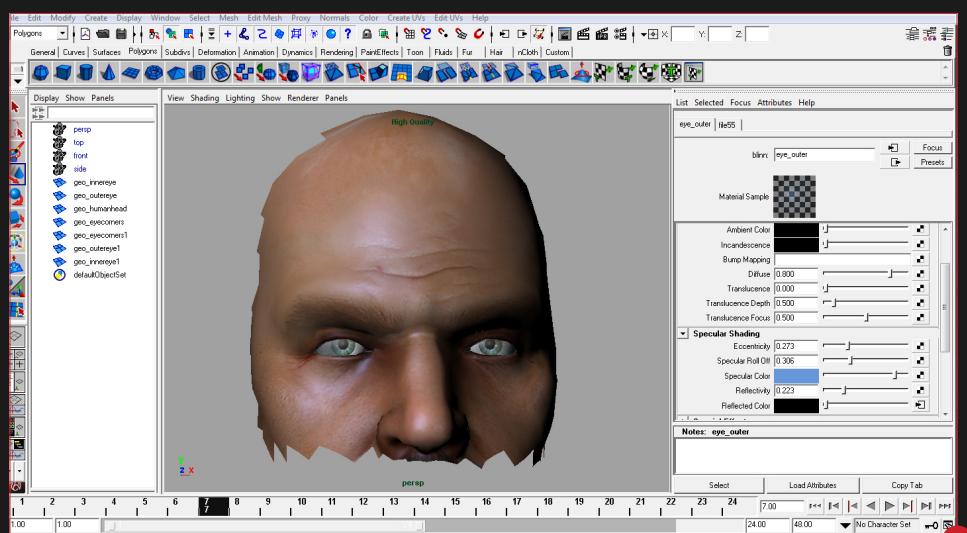
For the eye UV map, I planar mapped the entire eyeball (generally using Best Planar) and



adjusted my UVs as needed. Keep the outer edge of your iris in line with your iris texture and line up the outer edge of the model's pupil with the texture.

The outer eye section making up the eye's cornea will be full transparent. You can achieve this by moving the material's Transparency slider to the extreme right or by creating a black texture that will drive the model's transparency. Generally, black means "off" and white means "on" for grayscale textures used for transparency, gloss, etc. This section will control reflections, so we can adjust the specular power and color. I used a high valued specular roll off and low eccentricity to give sharp results and a bright blue color. I set Reflectivity to a lower number (0.223) and used a photo of a horizon for my Reflected Color, which is what will be reflected on the surface (Fig.09). In games, there is usually a common Reflection map for levels that will give a similar effect.

The final step is to create a texture for the cap portion of the model. For the UV map, I once



again used Best Planar and tweaked the final UVs to be straighter and easier to work with. I exported the UVs and began texturing. The Diffuse map can be a simple "bloody" color. Feel free to add details and grit depending on the effect you're going for. The real work goes into painting an Alpha map for your texture. Generally, this portion will be fully transparent with the exception of the corners. The intention is that we will fade the muscular, bloodshot part of the texture into the corners of the eye to avoid

a sharp edge dividing the eye and skin around the eyelids. Since this section never moves, it will also be able to replicate the muscle tissue surrounding the eyeball itself (Fig.10).

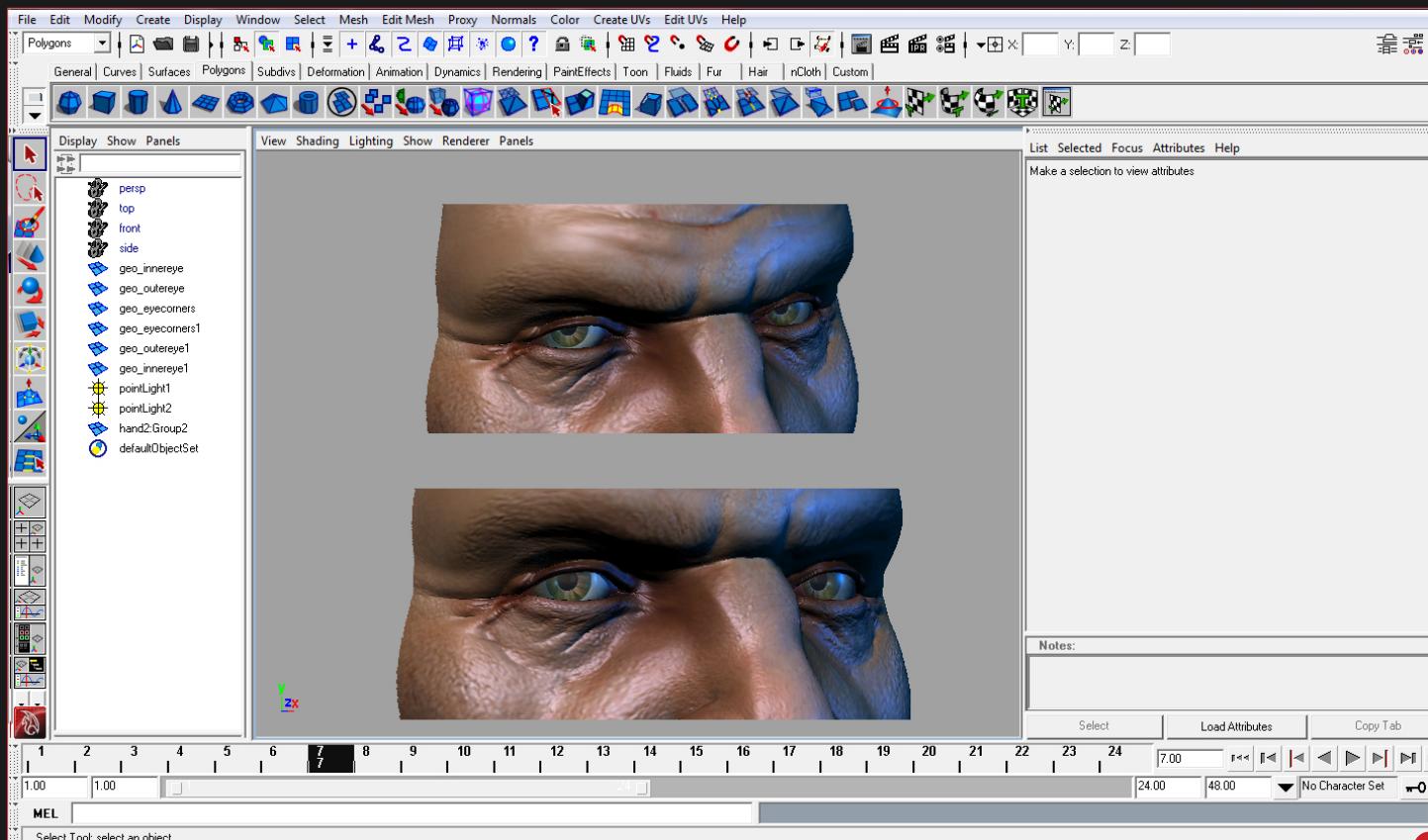
GAVIN GOULDEN

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MODELING FEATURES OF THE HUMAN ANATOMY



Modeling the features of characters is something that has caused problems for many artists over the years. A good model can easily be spoiled by an incorrectly modeled feature, such as a hand or an ear. This eBook offers a step-by-step guide to help you make sure you never struggle with feature modeling again, presenting detailed chapters that have been written specifically for 3ds Max, Maya, Cinema 4D and modo.

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MODELING FEATURES OF THE HUMAN ANATOMY: CHAPTER 2 - EYES

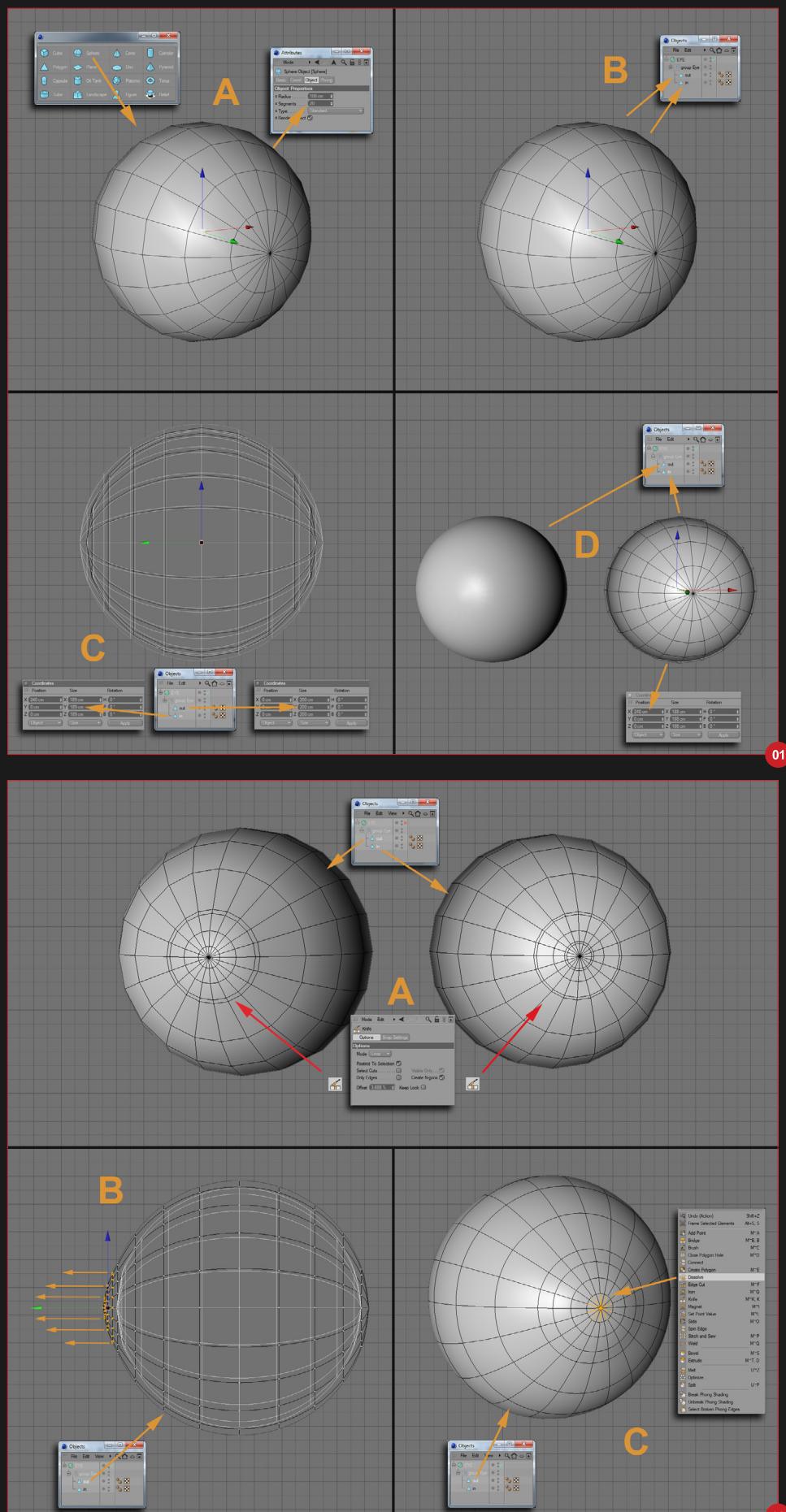
Software used: Cinema 4D

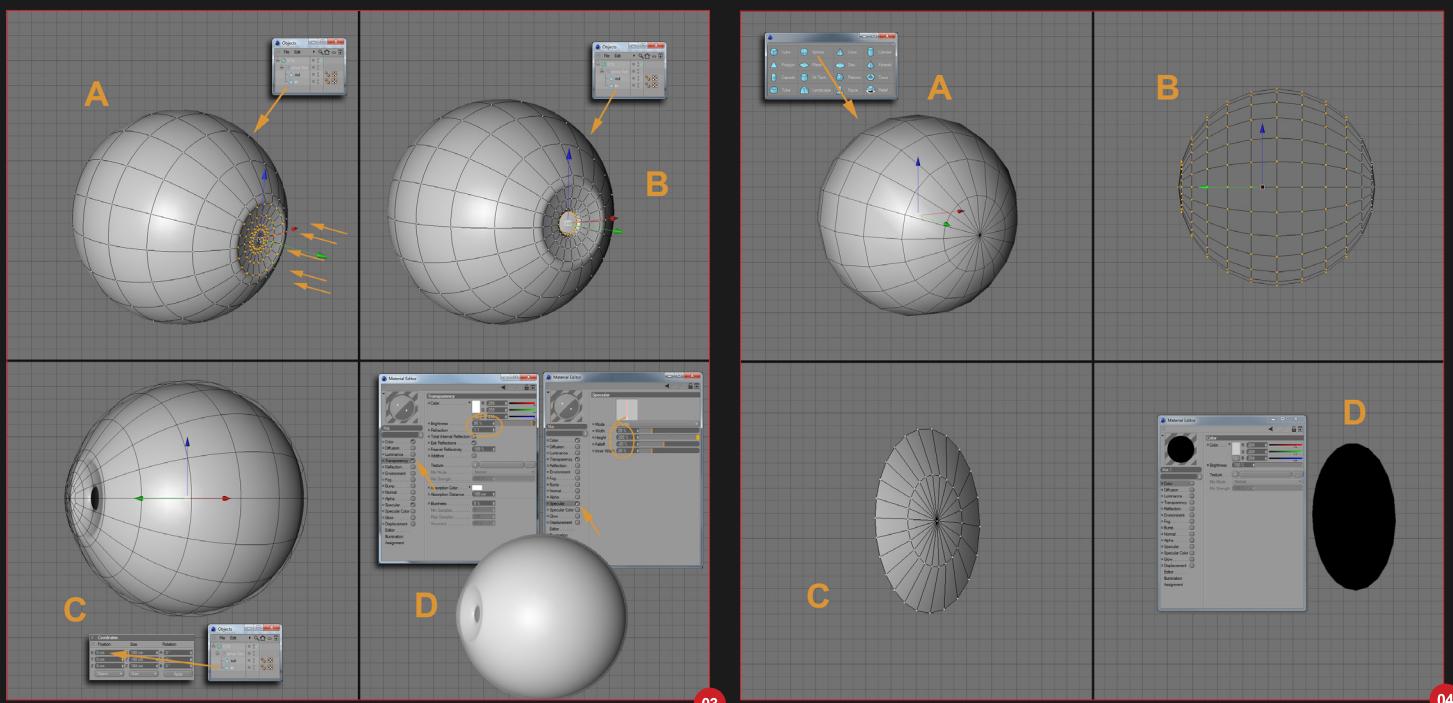
Eyes modeling can be very simple if you follow some easy steps. First, create a sphere with 20 segments (Fig.01a). Duplicate the sphere and rename one of them "IN" and the other "OUT" so they will be easier to recognize. Put the spheres in a group and call it "Group_Eye". Now set the group as a HyperNURBS Object (Fig.01b). Select the sphere called "IN" and scale it slightly inwards. You can also give a Scale value in the window coordinates (Fig.01c). Select the sphere again, shift it along the X axis and place it next to the sphere called "OUT" (Fig.01d).

Select the Knife tool in Loop mode and un-check Restrict to Selection. Select the IN sphere and the cuts will affect the last row of the sphere's polygons, thus creating the iris. The first cut creates the pupil size, the second cut should be close to the first cut, the third midway between the pupil and the iris's end, and the last near the inner edge of the iris. The same operation should then be carried on the OUT sphere, with the exception of the second cut near the pupil (Fig.02a).

Select the points created by the new cuts on the OUT sphere, push them out and give it a dome shape (Fig.02b). At the end of the dome select alternate parts of the central ring and delete them (right-click > Dissolve) (Fig.02c).

Select points previously created and push them to create a concave shape (Fig.03a). Select the sphere's center point and delete it with the Delete key. Select the ring of the pupil's point and push it slightly inward (Fig.03b). Bring the sphere to 0 on the coordinates so that the two spheres overlap again (Fig.03c). Choose the OUT sphere, give it a new material and rename it "Eye Out". Open the Material Editor and activate the Transparency with a Brightness of

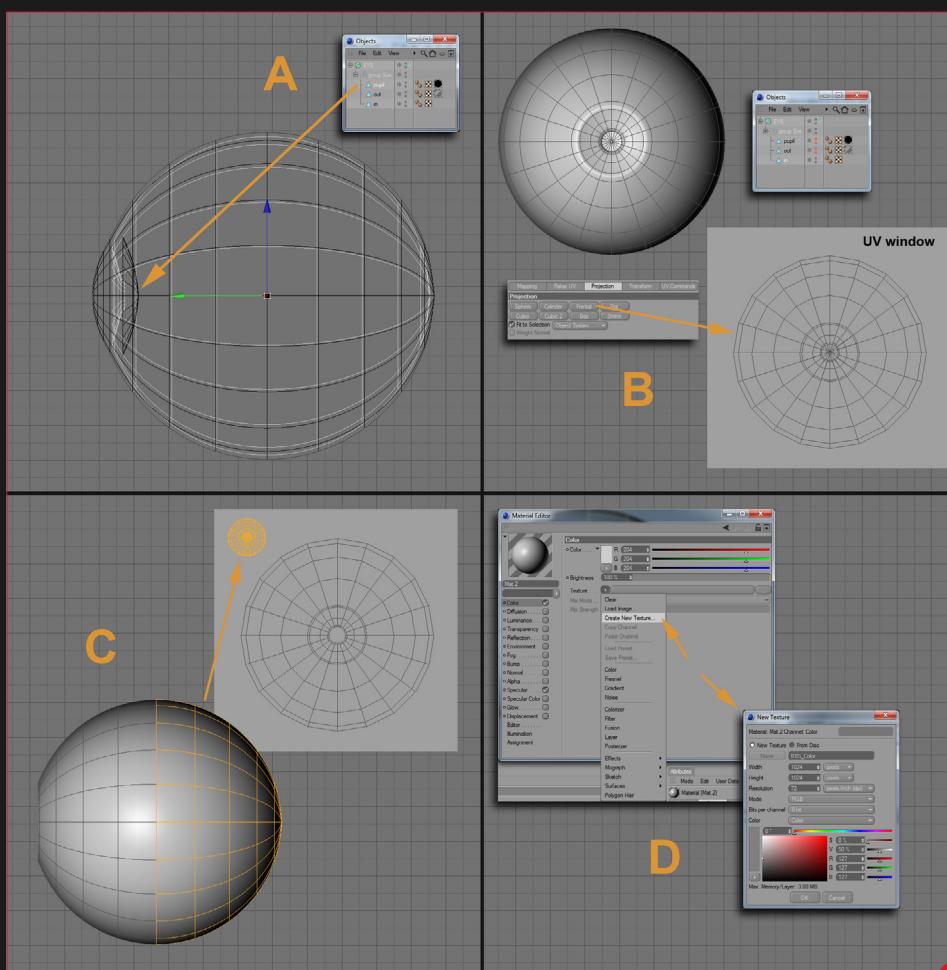




90%, and a Specular Refraction of 1.1. Now activate the Specular and set it to Width: 20, Height: 200, Fall Off: 20 and Inner Width: 20 (Fig.03d).

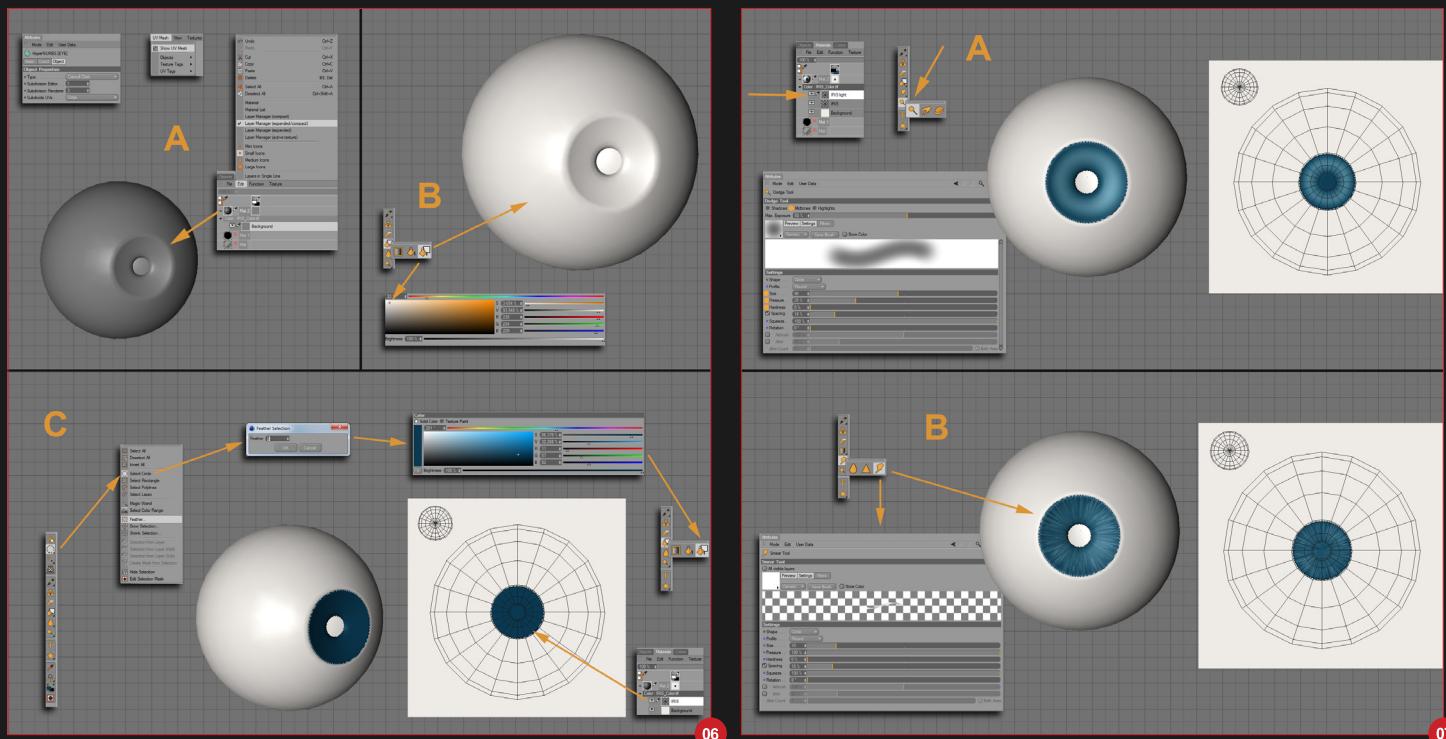
Create a new Sphere (Fig.04a) and delete 80% of it (Fig.04b) to produce a small disk that you should call "PUPIL" (Fig.04c). Create a new material and name it "pupil". Open the Material

Editor and un-check all the items until you get a completely black material. Now you want to attribute the new material to the object you just created (Fig.04d).



Editor and un-check all the items until you get a completely black material. Now you want to attribute the new material to the object you just created (Fig.04d). Enter the new PUPIL object in to the Group Eye and place it inside the IN sphere near the iris so the light does not penetrate into the eye (Fig.05a). Now switch to BP UV Edit mode. Switch on the front view and in the UV mapping section give a front projection to the IN sphere (Fig.05b). Select the UV of the latter half of the sphere, scale it in the UV editor and place it in the UV space corners (Fig 05c). This way we give all the importance to the front part of the eye. Create a new material and call it "iris". Double click the material in the Material Editor, click on the texture and select Create New Texture. A new window will be opened into which you can insert the name of the map (in this case "Iris_Color") and choose the map size, 1024 x 1024 (Fig.05d).

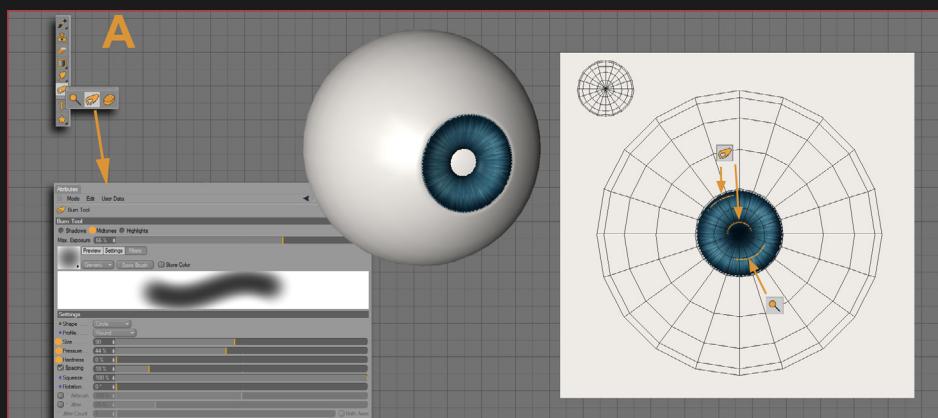
At this stage I will show you how to create an iris, although there is also the option to use the image of an iris from a photo. In both cases, the next steps will show you how to use the maps in the various channels. First, select the Hyper NURBS object, switch in the Catmull Clark and,



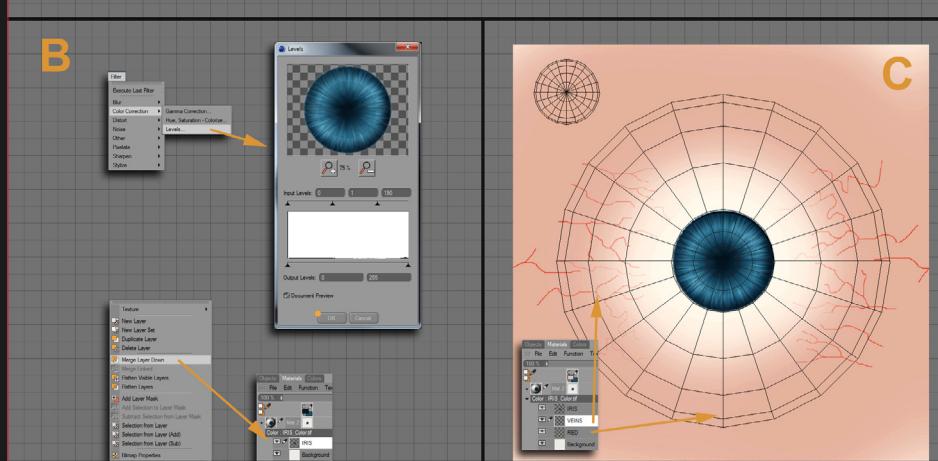
in the Attributes option, change the Subdivide UVs in EDGE so the smoothed UV follows the same mesh course. Now make this visible in the UV selected and in the UV Mesh select Show UV Mesh. As the last step, before you

start go to Object Panel > Layer Manager and select Edit (expanded/compact). This way the management level will be very similar to other programs (Fig.06a). Attribute the IN sphere with the Iris_Color material. Choose a yellowish

white and fill the Layer tool in white across the sphere (Fig.06b). Create a new layer and call it "Iris" (Window Materials > Texture > New Layer). Create a circular selection that delimits the iris. Under the Window tab, select Choose Feather and set the value to 5. Choose the color you want the eye to be, and fill the colored section (Fig.06c).



Create a new layer and rename it "Iris Light". Select the Dodge tool and set it as Mid-tones. Vary the pressure and the hardness in order to obtain the soft light on the inner edge of the iris (Fig.07a). Now select the Smear tool and set the brush size to a low value. Again with the active selection use the Smear tool on the iris – it gives a less precise and more natural appearance to the eye (Fig.07b).



Once the iris is complete duplicate the layer (right-click on the current level), select the Burn tool and set it to Mid-tones. Adjust the size, pressure, and hardness in such a way as to obtain a fairly soft brush. Now you are going to darken the inner profile and center of the iris (Fig.08a). If the iris looks too dark or light, select the filter level located below the window Filter > Color Correction and calibrate the intensity

of the map to your liking (Fig.08b). Create two new layers that you will rename “Red” and “Veins”. Select the Red layer and, with the soft brush, paint the outside of the eye. Then select the Veins layer and, with a small brush, draw the veins on the eye to make them look more realistic (Fig.08c).

Open the Material Editor and select and activate Bump. Create a new texture that we will call “Eye_Bump” (Fig.09a). Select the Veins layer previously created in color map and select the entire workspace (Ctrl + A). Copy the veins texture (Ctrl + C) then select the bump layer and paste the veins texture. This will create a new layer containing the veins textures in grayscale and in the same position as the veins that are in color (Fig.9b). Open the Material Editor again and select and activate Specular Color. Create a new texture that we can call “Eye_SpecularColor” (Fig.09c). Copy the color from the iris texture and paste it in the Specular map, repeating the same operations as you did earlier for the veins texture. Here you will create a new layer with a grayscale iris. (Remember that the Specular map can be colored. For example, if you put a blue color into the Specular map the result we will get from the light source will be shades of blue instead of white)(Fig.09d).

Select the Specular map texture and, using levels, correct it to give it more light colors and sharpen the map (Fig.10a). In the Material Editor select Specular and attribute it to the material; the result will be that of a smooth specular (Fig.10b). Now select the OUT part, open the Material Editor and activate Voice Material Reflection (Fig.10c). If your scene does not include an environment from which the reflection takes information you can attach a map like a HDRI to make it look more realistic.

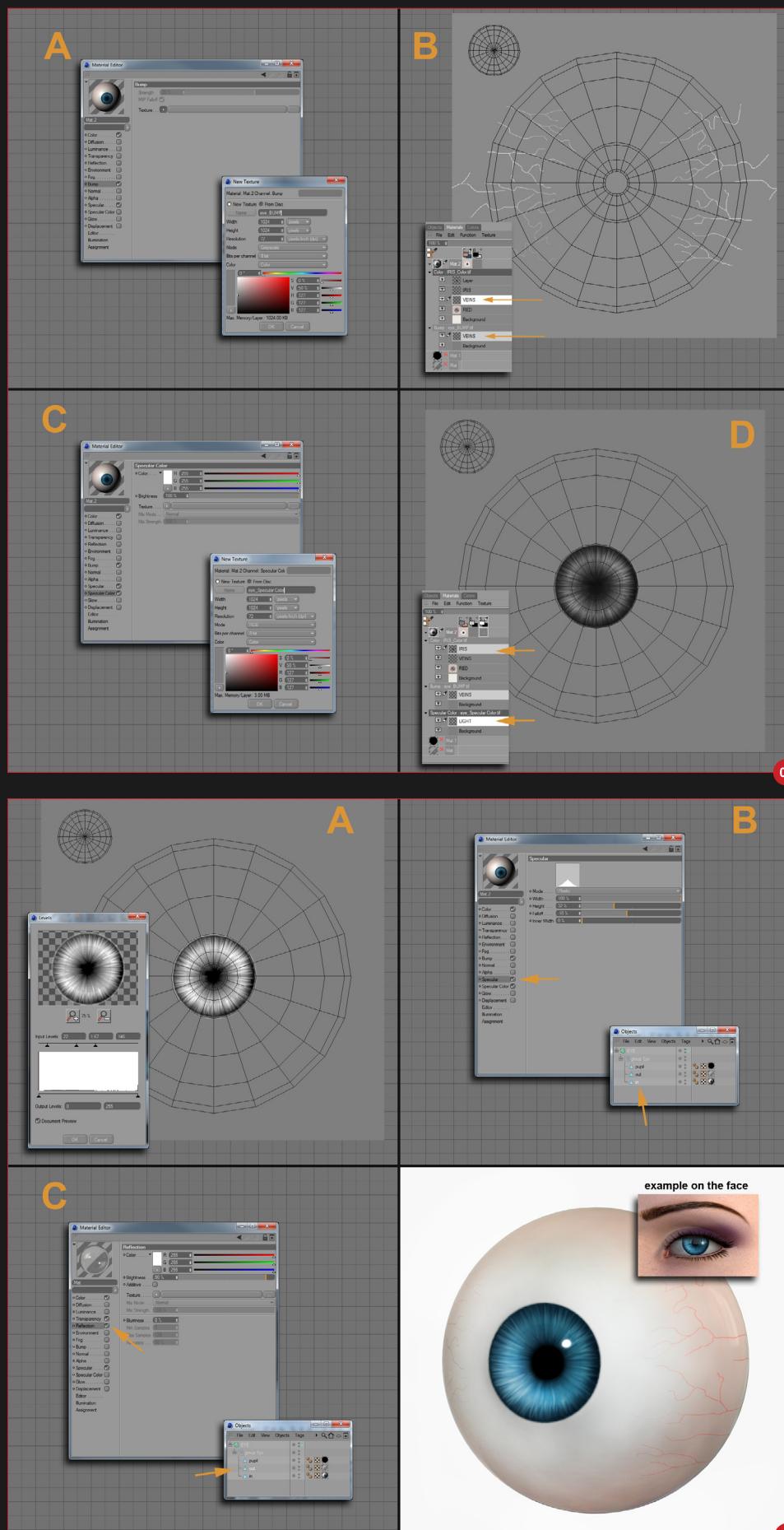
LINO MASCIULLI

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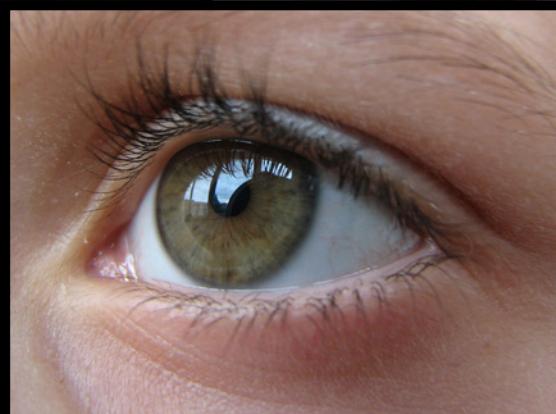
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MODELING FEATURES OF THE HUMAN ANATOMY: CHAPTER 2 - EYES

Software used: modo

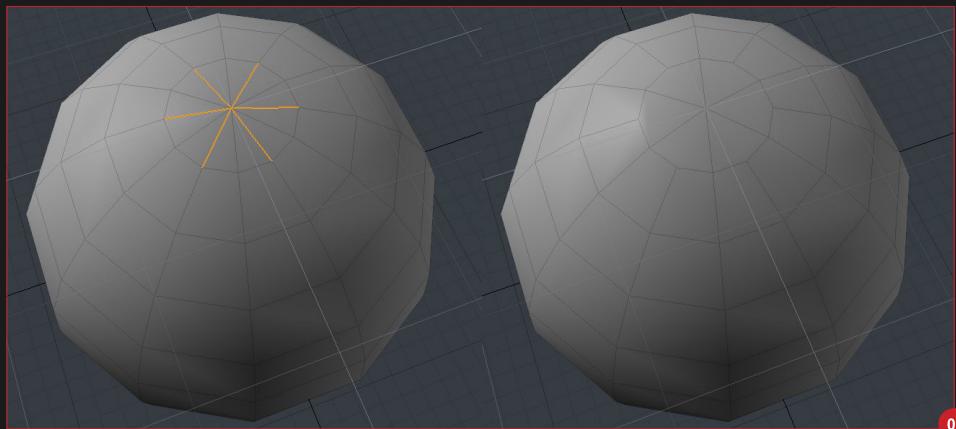
MODELING THE EYES

You might think modeling human eyes must be much easier than the last tutorial where we modeled the human ear, but it's not just modeling that counts. Actually texturing and shading this model is going to play a big role so besides modeling I will lead you through some texturing and shading techniques in modo 401.

The eye is the key part of making your character look believable because we are so used to looking at eyes on an everyday basis, so making a CG eye look real is not an easy task. However a key element of success is understanding the anatomy of the human eye so let's start there. The most prominent part of the human eye is the iris (the colored part that covers roughly 1/3 of the sclera). Although the iris may look like a concave shape at first glance it's actually a little flattened and convex.

In the center of the eye is the pupil, a black hole which can vary in size depending on the brightness of the light the eye is exposed to. On the top of the iris and pupil lies the cornea, the lens-shaped transparent tissue that refracts light that bounces from the iris and pupil making them look bulgy.

To construct this shape we are going to interpret it as two spheres, one for the transparent glossy



outer part with the bulgy lens and one for the inner part which is going to represent the sclera iris and pupil. So let's build some geometry. From modo's primitives choose a sphere and set it to 12 segments inside and 12 sides. To make a perfect sphere make sure you are holding the Ctrl key while dragging the sphere in the viewport.

Quick modo tip: By holding the Ctrl key all the primitive tools will be changed to Unit mode. Click on the icon while holding the Ctrl key to make one meter the uniform sized primitive.

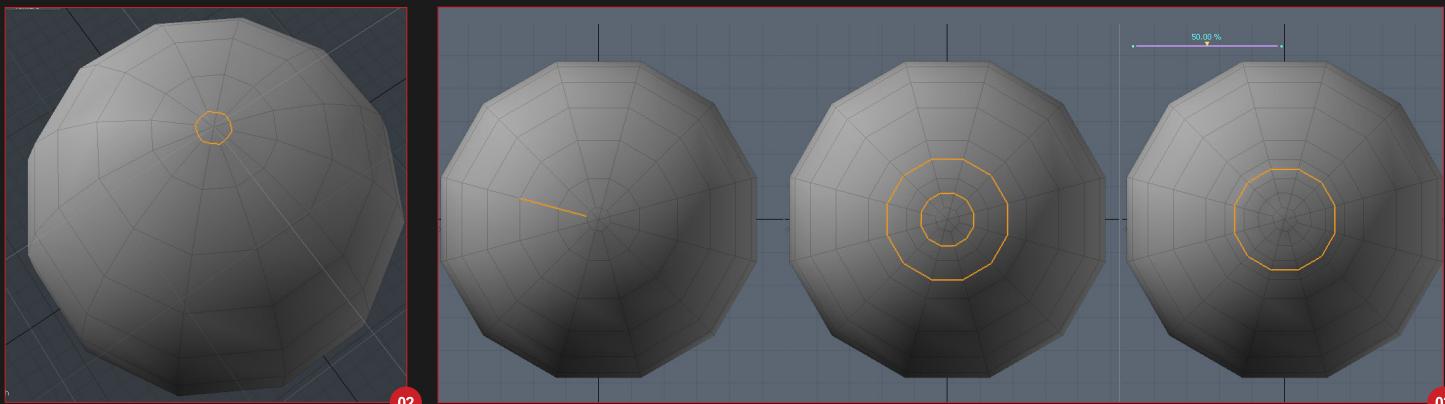
The topology of the standard sphere consists of vertical vertices which meet at the top and bottom of the sphere making a few triangles which do not look smooth when the model is subdivided. So the first task will be to get rid of those triangles by deleting every other edge at the top and the bottom of the sphere (**Fig.01**). Now select all remaining six edges at the top of the sphere and use the Loop Slice tool (Alt + C) with the "Slice Selected" and "Keep Quads" options checked. Click on the canvas and drag

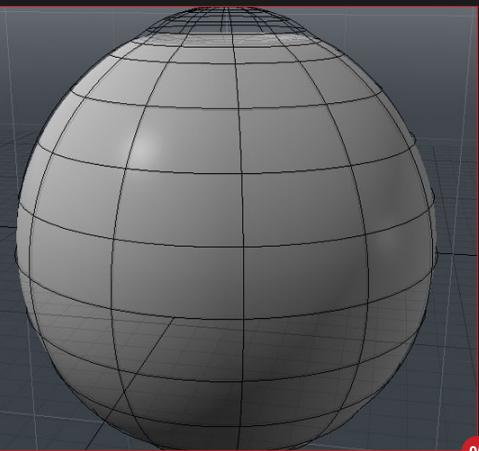
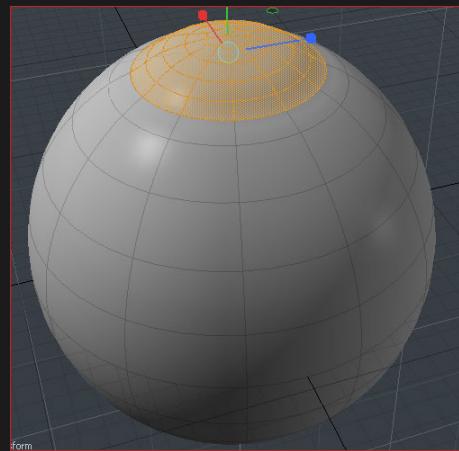
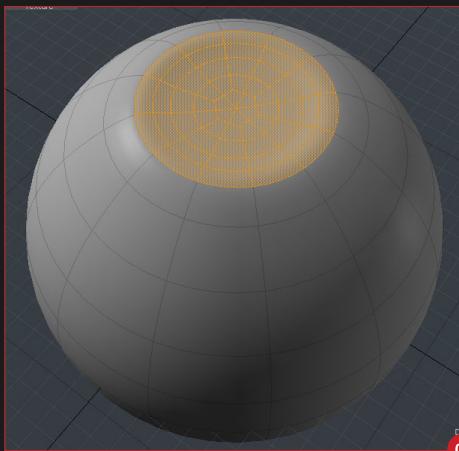
to place the new created loop to 70% position or roughly to the size of the pupil. After making the new loop keep those edges selected and from the deformer menu choose Smooth (Shift + S) to apply smoothing with the parameter set to 1 for Strength and 5 for Iterations. Now you should have a result similar to **Fig.02**.

Now select the two edges, as in **Fig.03**, and again use the Loop Slice tool but this time with the "Slice Selected" parameter unchecked. Set the new created loops at 50% position. Add another loop using the same technique between second and third loop.

Quick modo tip: Hold down Shift and press "?" to start a turntable animation in the viewport. This is a really nice way to review your model from different angles.

Now we have all the necessary geometry for both the inner and outer sphere. Let's duplicate this sphere by selecting it from the Items menu on the right side and from the right-click menu select to duplicate it. Now when we have two





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identical spheres this would be the best time to give them some appropriate names. For the rest of the tutorial we are going to call them the "Outer" and "Inner" spheres. Now select the inner sphere and scale it down by one percent and hide the outer sphere by clicking on the eye icon by its name under the Items menu. Now it's time to reshape the inner sphere, so select the group of polygons as shown in **Fig.04** and scale them down by 50% in the Y axis. After re-scaling the polygons should pop out from the sphere. Use the Move tool to get it back in position by moving the polygons only in the Y axis. Press the Tab key to view the geometry in Smooth Subdivision mode. Now you are done modeling the inner sphere of the eye and your result should look similar to Fig.04.

Now let's reshape the outer sphere in a similar way. Unhide the outer sphere and select the same group of polygons as you did with the inner sphere, only this time scale the polygons up in the Y axis to 200% (**Fig.05**). Again use the Move Transform tool in the Y axis to correct the position of the newly created bulge.

Quick modo tip: Press "0" on the numerical keyboard to maximize your viewport.

Now when we have completed the modeling it's time to apply textures to the eye. The inner eye is the only one that's going to be textured since the outer part will be fully transparent. To apply textures to the inner sphere we should first unwrap it to get the UV coordinates.

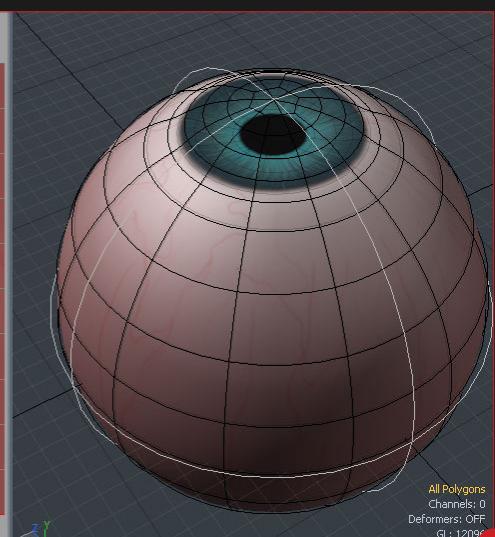
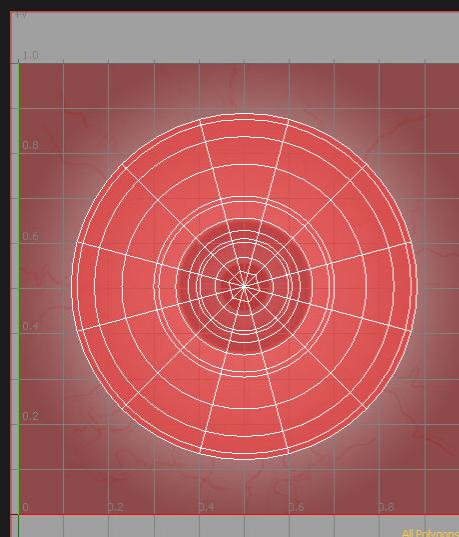
modo UV tools are one of the best for this task and will make this process really easy. Press the UV tab at the top of the viewport to enter the UV layout, and since we are going to work only on the inner sphere you can hide the outer one. On the right side of the split viewport go to top view and choose Project from View from the UV menu on the left. The texture we are going to use will be projected on to the model from the top view and will repeat on the back side of the eye. Since it's very unlikely that you will ever see that back of the eye, let's leave it that way.

Now let's set some materials for the inner sphere. Press "M" on the keyboard to assign a new material group and name it "inner eye". Now you need to load the image file for the eye color. I have included a layered PSD file texture with this tutorial so you can use it for this task. You can also explore the PSD layers and make your own texture which I definitely

encourage you to do since it's very easy and self explanatory.

To load the image go to File > Load Image. Select the inner eye material. Now you should also use the same image as a backdrop for the UV view. In the UV view go to Options and choose the eye texture from the backdrop menu. In the same view double click on the polygons to select all and fit your UVs by scaling and moving them to fit the iris to the flattened part of the model as in **Fig.06**.

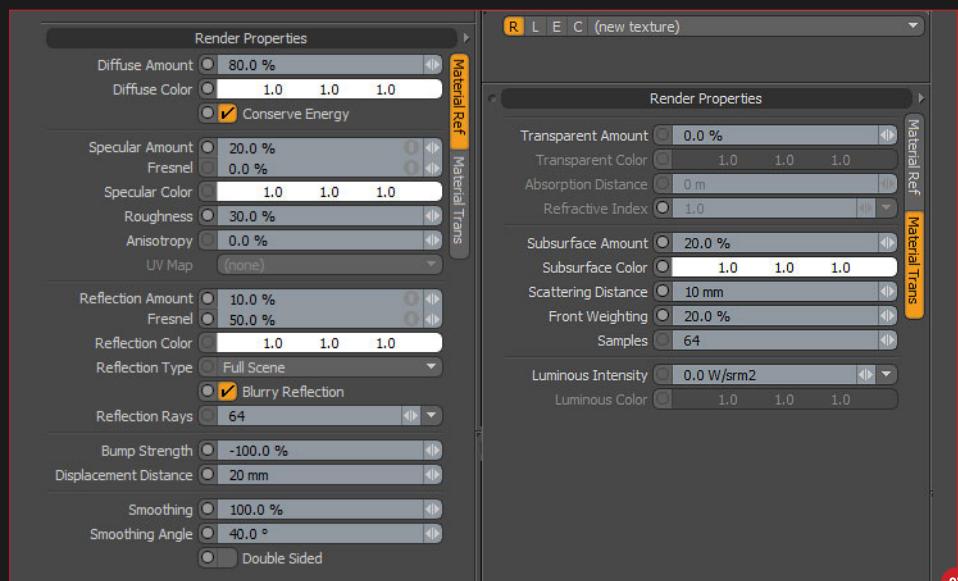
Now when we are done with the texturing let's set up some materials for the inner and outer sphere as well as lighting. First let's set properties for the inner eye which should be treated as a soft and translucent tissue. Since we have already loaded a Diffuse map let's reuse it a few times for different material properties. Select the eye texture in the material



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group, duplicate it and change the effect from Diffuse to Bump. The modo render will interpret this color image as a grayscale image and will shade darkened areas as bumps and cavities. But we have a problem now because blood veins in textures are darker and we would not want them to look as empty canals, so it needs to be compensated with a Bump Strength parameter and set to 100 to reverse the effect.

Now duplicate the same texture once more. This time we are going to use it as a reflection color since an iris has a strange property and way of reflecting lights in its diffuse color. Set Roughness to 30%, Reflection Amount to 10% and Fresnel to 50%. The Blurry Reflection option should be checked. Now let's reuse the same texture again, but this time for subsurface scattering. Change the effect for the image as you did before but this time to Subsurface Color. Set the Subsurface Amount to 20%, Scattering Distance to 10mm and Front Weighting to 20%. Compare your settings with **Fig.07**. The material for the outer sphere is going to be much simpler since there are not any textures. Go to the outer sphere material and set Reflection Amount to



1 and Fresnel to 20%. Now go to the Material Trans tab and set the Transparency to 100% and Refractive Index to 1.2.

Quick modo tip: You can set your own hotkeys for often used commands. Execute the commands you wish to map to the key. Then go to Command History on the right side menu and right-click on the last action. Then choose the Map Command To Key and press the key you want to map the command to.

These settings are based on image-based lighting that I am going to demonstrate in the next few steps. First go to the items list and switch of the Directional Light. Now go to the Shading tab next to the items and click to Render and enable the Global illumination. Set the Subsurface Scattering to Both. Go to modo's assets and find the Kitchen Image Probe in the Environments folder. Load that image in the Environment Shader Tree by simply dragging and dropping it. The last step is to set the High Value for the image to 50%.

If you find any of this confusing please refer to the file I have provided with this tutorial. If you have done everything correctly you should have something similar to **Fig.08**. Now all that's left is to copy this model once more and fit it to your 3D models head. I hope you have enjoyed reading this tutorial as much as I did writing it.

ANTO JURICIC

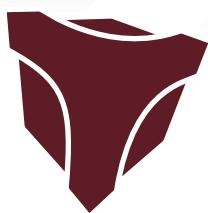
For more from this artist visit:

<http://anto-toni.cgsociety.org/gallery/>

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monty.band@gmail.com



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